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An Installation for Heavy Fuel Oil

Heating Furnace Equipment Designed to Avoid the High Cost of Light Fuel Oils and the Limitation in the Supply—Details of the Design and Operation

BY W. C. BUELL*

MOST fuel oil installations serving heating furnaces, especially the smaller installations, reflect little credit on the designer, who often is the plant master mechanic and installs the oil equipment without design or a coordinated plan. The following description of a recent oil fuel installation indicates what may be done, even under rather severe limitations.

This installation was made at the plant of Hubbard & Co., Pittsburgh, manufacturers of electrical pole line equipment, railroad tools, shovels, etc. In the various departments of this plant, which is of considerable extent, natural gas, oil and pulverized coal are used for fuel. A short time ago Hubbard & Co. decided to segregate the bulldozer operations of the electrical materials department, and for this purpose erected a brick, steel and glass monitor type building 60 ft. by 160 ft.

When the engineers took over the design of the projected oil system, furnaces and machine layout, it was found impossible to locate the oil, steam and air piping in trenches under the floor, as is most desirable, owing to the fact that the concrete floor was in place. Accordingly, all the piping was placed overhead, supported on the roof trusses.

*Consulting engineer, Pittsburgh.

It was arranged that 12 bulldozers, each with its furnace, should be installed, six sets on each side of the building. The general layout of that side of the plant which includes the fuel system is shown Fig. 1. This picture was taken with only two of the six machines on their foundations. The hood at the top of each furnace was later connected to a common stack for the removal of heat from the fires, and the oil system at the left was inclosed with expanded metal.

Furnaces

The furnaces were very simply constructed of steel shapes and fire brick, as shown in Fig. 2. Their inexpensive rugged construction and the absence of cast iron are notable. The "bung clamps" *A* are cast steel and the rods *B* of bolt stock. Every reasonable effort was made to design the furnaces so as to give the operators the maximum protection from the heat; notice the hood and the double shields at both sides.

All furnaces were of the same fire box length—5 ft. 3 in.—but were supplied having two maximum widths of slot *C* 13½ and 18 in. The width of slot is easily adjustable by means of the two bungs *D*, which are placed on the top of the furnace with the long axis in the horizontal plane. By this means of adjustment, sharply defined heats are given and the minimum fuel is required, as the furnace can be adjusted easily to

Fig. 1. Bulldozer Furnaces and Their Fuel Connections, *A* and *B* Being Insulated Pipes Dropped from the Header to Each Furnace; *A* Is the Oil Supply and *B* the Return. The main service supply pipe is at *C* and the oil return to the tank at *D*

fit the work being heated. As will be readily seen, the furnaces may be used without change for either center or end heats.

Oil Burners

Oil burners supplied by George J. Hagan Co., Pittsburgh, and of an advanced type (Fig. 3) were used, two being applied to each furnace. The choice of burners was based on: (a) the method of circulating fuel through the oil head of the burner (patented), (b) the method of adjusting air and fuel at the burner tip instead of at a point remote from the point of mixing and (c) the secondary air adjustment shutter which permits the character of the flame to be controlled through wide limits.

System for Heavy Oil

The writer is firmly convinced that the present common use of light fluid fuel oils will be greatly curtailed in the near future, both by the decreasing availability of oil of this character at a relatively low price, and the action of public opinion against the misuse of the lubricating and chemical reserves of the country, and that only the heavy, viscous, petroleum residuums and tars from coal distillation processes will be considered permissible liquid fuels.

With this thought in mind, the oil system was predicated on the use of heavy liquids, with a viscosity range above 300 Saybolt seconds at 100 deg. Fahr. The successful use of such fuels requires that the fluid be kept constantly in motion in all pipe lines. Accordingly, a circulating or two-pipe system was designed, one pipe taking the oil from the service system to the burner heads, the other returning the unused balance from the burner head to the storage tank.

It will be noted in Fig. 1 that two insulated pipes, *a-b* drop from the header above to each furnace. These are respectively the oil supply and return. The main service supply pipe *c* is seen in this photograph in a vertical position in the center of the second window from the left, rising from the heater to the header on the truss, and the oil return to tank, *d*, also in a vertical position, may be seen at the extreme right of the same window.

The service pumping equipment was based on moving double the maximum quantity of fuel required for burning, or approximately 300 gal. per hr. In Fig. 4 is shown an enlarged view of the oil unloading, oil service and air systems.

It is conceded that generally an air pressure of 1 to 2 lb. per sq. in. brings about the most economical and satisfactory combustion condition with liquid fuels properly conditioned. The blower *e* is a 25-hp. 3-stage turbine type machine, designed to deliver 2250 cu. ft. per min. at 1½ lb., and with an oil burning capacity of 135 gal. per hr. The air piping *f*, including the drops for each furnace, is spiral riveted pipe. This is more costly than the usual soldered galvanized sheet steel pipe, but once installed it withstands usage that would cause the soldered pipe to leak, and a leak in an air line means expense for power, as energy required is on a basis of air moved.

Oil Storage

Ample oil storage for a 15-day supply is provided adjacent to the building. The termination of the oil suction line, *a*, in the tank, Fig. 5, is surrounded at its lower end by a small pipe coil *b* through which steam thermostatically controlled is passed for warming the oil entering the pump suction line, and thus to permit easy flow. A sheet metal hood *c* centering on the suction pipe surrounds the suction end and coil and retards warmed oil from working to the surface of the oil body and dissipating the effects of the steam heating. The return line *d* from the oil service system discharges under this hood and all heated oil is thus retained in a relatively small volume.

Thermostatic control on the steam, which is adjustable within a considerable range, permits the temperature of the oil flowing in the suction line to the pump to be maintained constantly at a selected temperature and, as oils available for fuel seldom require heating to temperatures over 100 deg. Fahr., for good pumping conditions, this is the usual suction oil temperature.

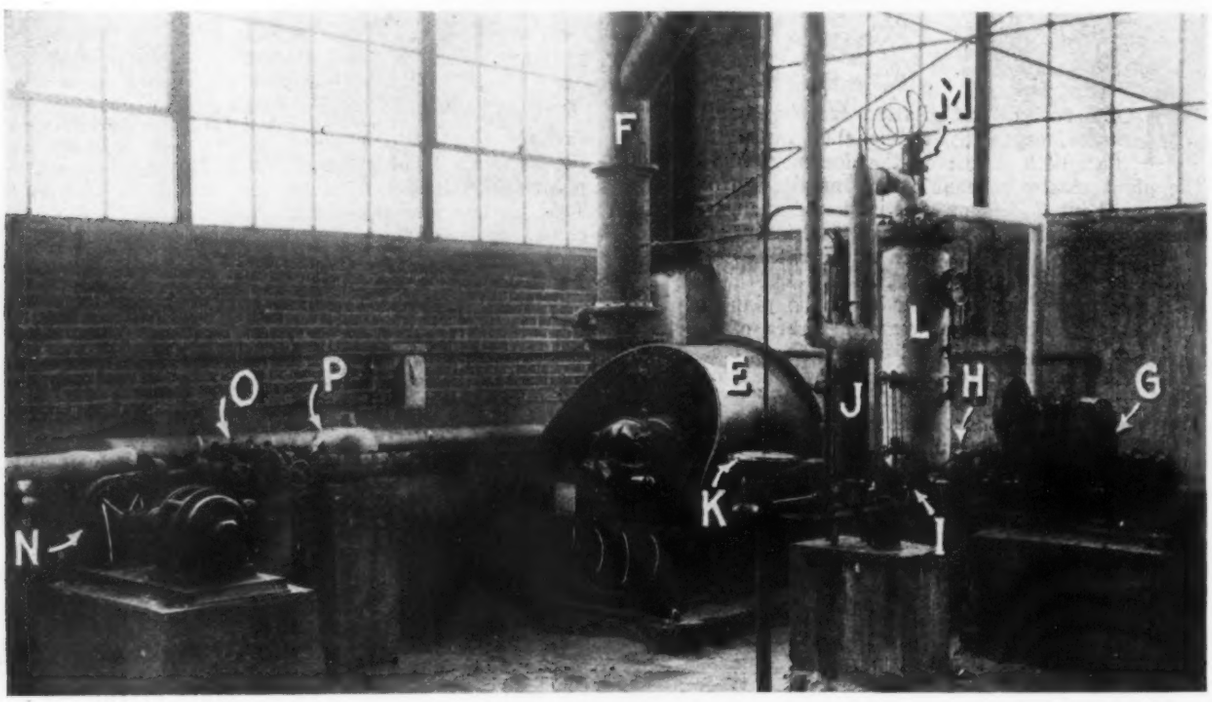


Fig. 4. Oil Unloading, Oil Service and Air System. The 25-hp. blower is at *E*; air piping, *F*; service pump, *G*; emergency relief valve, *H*; twin strainer, *I*; oil cylinder, *J*; emergency valve, *K*; steam booster heater, *L*; thermostatic control, *M*; centrifugal pump, *N*, for unloading incoming fuel from tank cars; twin strainer, *O*; meter, *P*

Service System

The service pump *g*, Fig. 4, is motor driven, of the triplex type with 2 in. diameter by 2½ in. stroke of pistons, and geared to operate at one-half the rated pumping speed for water, or in this particular case

45 r.p.m. The pump is capable of delivering at pressures up to 125 lb. gage, but with properly conditioned oils 30 to 60 lb. appears to be the desirable pressure range.

After leaving the service pump the fluid then passes an emergency relief valve *h*, which is set to operate at a pressure 10 lb. greater than the selected service line pressure. There is a second relief valve in the return system (not shown), through which the unused oil returning to the storage tank passes, and which functions at the selected line pressure. This second relief valve is presumed to pass all surplus oil but if, for any reason, flow through this second valve is interrupted, an increase in service line pressure of 10 lb. will cause the first-mentioned valve to function, thus safeguarding the service lines and apparatus against sudden and excessive pressures.

Then the oil passes through a twin strainer, *i*, the baskets having a 1/32-in. screen, which is smaller than any apertures in the oil burners, and accordingly any foreign substance likely to interfere with burner operation is removed. By means of a system of sliding valves either basket may be cut out of the line for cleaning and without interference in any way with operation.

The oil next passes into a vertical cylinder of considerable height, *j*, which is fitted with a gage glass in its lower section. From three-quarters to four-fifths of the volume of this cylinder is air filled; this gives a pneumatic cushion for the removal of the pulsations inherent in small pump operation. As fuel oil has a considerable affinity for air, there is a continual depletion of the air volume. This is renewed by means of a small pipe connection from the shop air compressor lines, the pressure of which is always greater than the oil service pressure, and consequently the incoming air forces the oil to its proper level in the gage glass.

Next in the oil service line is the emergency valve, *k*. The diaphragm of this is depressed and the oil valve held open by static pressure from the air blower system. If through interruption of the electric current or for other causes the blower ceases to function, this emergency valve closes, shutting off the oil flow and the valve will not function again until manually set with the air pressure at its normal point. This valve thus prevents oil flooding through failure of the air supply and its later functioning.

Passing then through a steam booster heater, *l*, the oil is heated to the proper final temperature for correct atomizing action at the burners. This final temperature depends upon the physical characteristics of the particular oil being used, but usually ranges between 160 deg. and 240 deg. Fahr. and the heater is fitted with a thermostatic control, *m*, adjustable within this range.

Installed as described above, the system will work continuously with slight attention. Starting and stopping, which means throwing two electric switches, requires the attention of an operator, but aside from that and occasionally cleaning the strainers and giving the moving parts of the equipment the proper inspection and oiling, no other attention is required. All waste steam lines are trapped and all steam and oil lines are insulated, which in conjunction with the thermostatic controls allows proper heating from the minimum steam.

As there is always hot fluid oil at the burners, the furnaces, even after a shutdown of several days in cold weather, may be started easily and quickly, and the absence of smoke from the fires during the starting

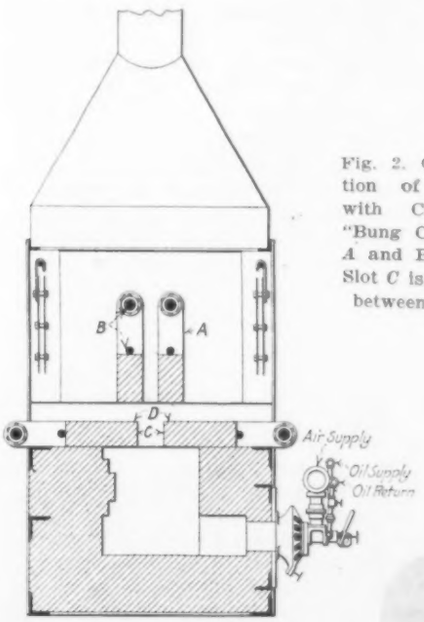
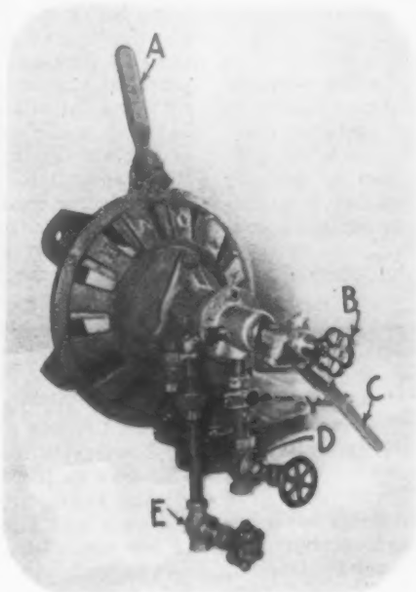


Fig. 2. Cross Section of Furnace, with Cast Steel "Bung Clamps" at *A* and Bolts at *B*. Slot *C* is adjustable between bungs *D*



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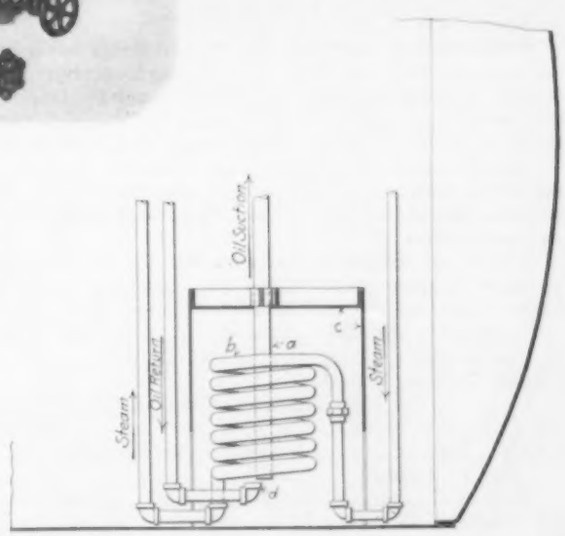

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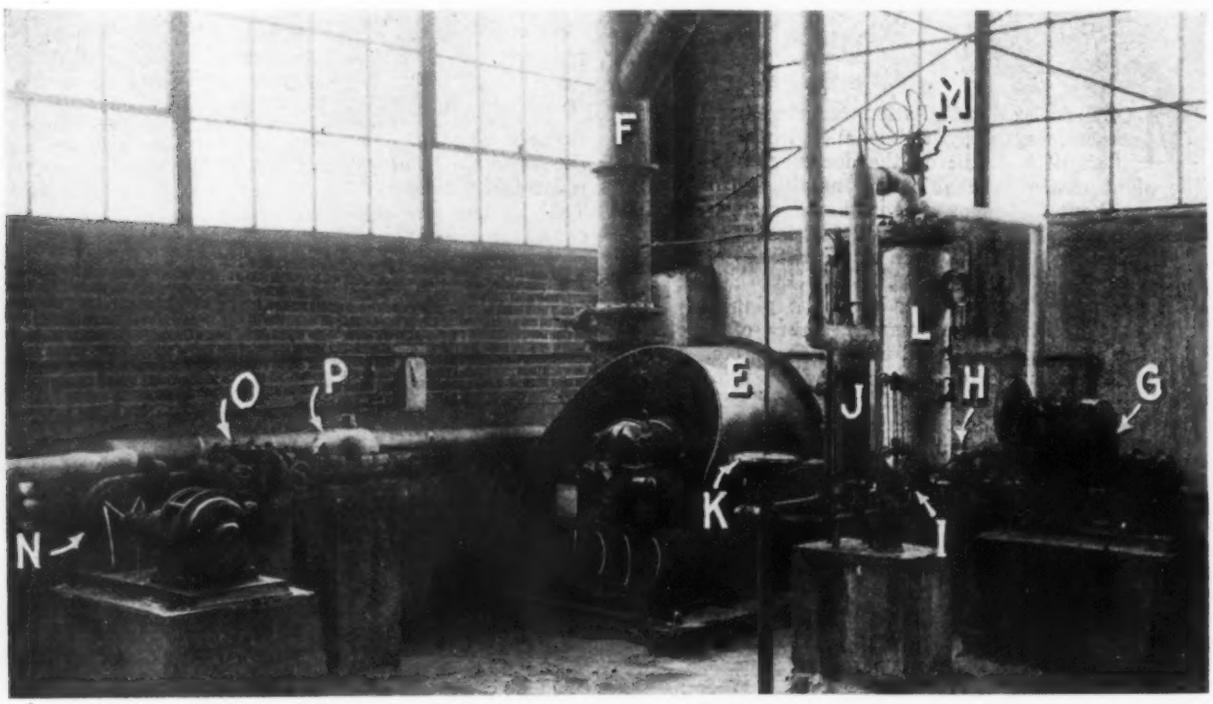

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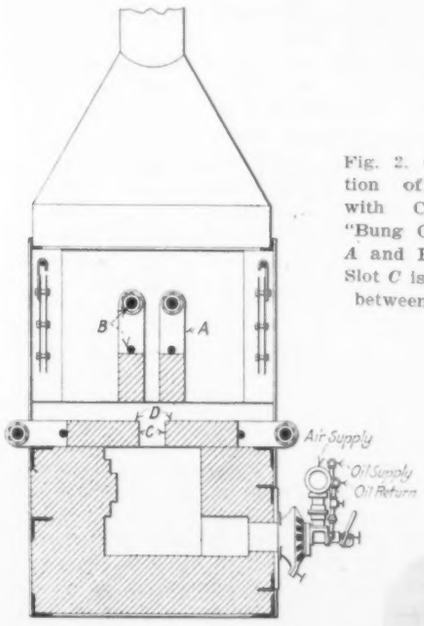

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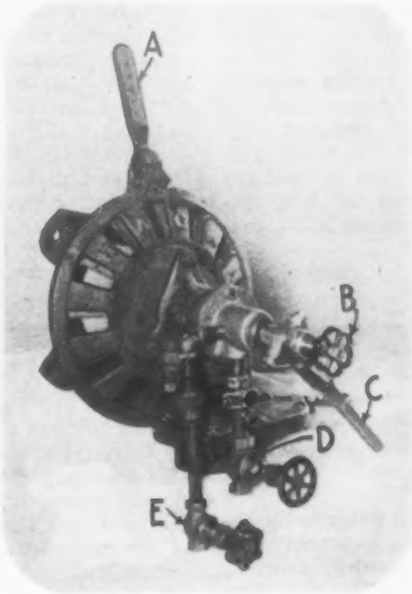

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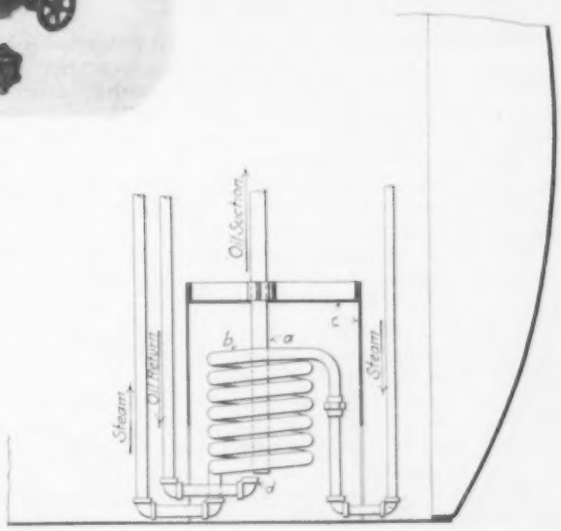

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As there is always hot fluid oil at the burners, the furnaces, even after a shutdown of several days in cold weather, may be started easily and quickly, and the absence of smoke from the fires during the starting

period is most noticeable, especially to one who has operated furnaces with the one-pipe, cold oil system.

Oil Unloading System

The oil set for unloading incoming fuel from tank cars and delivering it into the storage tanks is shown at the extreme left of Fig. 4. This consists of a motor-driven centrifugal pump, *n*, rated at 100 gal. per min., a twin strainer, *o*, of ample capacity and a meter, *p*, the latter to check the oil volume of the invoice.

The unloading pump suction is placed in a pit adjacent to the railroad siding, a couple of hundred feet away; when a tank car is being unloaded the discharge valve on the car is connected to the suction by means of a 3-in. flexible metallic hose. A steam line is wrapped to the suction throughout its entire length, terminating at the pit aforementioned, and this is, when necessary, connected to the heating coils of the tank car to warm the oil for pumping.

The Operation

To try out the system the owners purchased a car of Kentucky fuel oil of about 20 deg. Beaumé gravity but highly viscous at low temperature. The car was delivered on the last and coldest day of the coldest spell of the winter and the oil temperature was not far from zero.

As it was desired to operate the plant at once, an immediate effort was made to unload. The suction and steam lines were attached to the car and it was then found that the car heating coils were inoperative (quite a usual occurrence). For four hours the pump, rated at 100 gal. per min., was able to deliver less than that quantity per hour, but later through the introduction of steam directly into the oil, the pump operated at its maximum and all oil was easily transferred to the storage system. As ample provision had been made for draining the storage tanks, the added water was later easily removed after time had been allowed for settling. The service system was then put in operation and within 30 min. after starting, perfect operation was secured in all the furnaces.

Eliminating repairs necessitated by cracked and faulty fittings (which were noted at once and corrected as soon as possible), no trouble of any kind has been encountered, nor is any anticipated, so long as the system is conscientiously given the small amount of supervision required.

Advantages of Heavy Oil

Heavy oils offer the user:

(a) A considerable differential of price per gallon, often 20 per cent or more.

(b) A considerable increase in calorific value: note the figures following, and further that the difference between 10 deg. Beaumé and 30 deg. Beaumé in this particular respect is 9 per cent.

10 deg. Beaumé, 156,686 B.t.u. per gallon
15 deg. Beaumé, 153,198 B.t.u. per gallon
20 deg. Beaumé, 149,783 B.t.u. per gallon
25 deg. Beaumé, 146,760 B.t.u. per gallon
30 deg. Beaumé, 143,550 B.t.u. per gallon

(c) A much greater floating supply.

Heavy, relatively low priced oils are with us today and will be with us when light oils as fuel are forgotten. Light oils can be burned satisfactorily under almost any conditions, except as to operating costs and continuity of supply.

As the treasurer and the purchasing agent are the only persons aware of these two factors, the operating man has excellent grounds for objecting to the use of heavy oils in his plant, he knowing that his light oil, one-pipe system will not give satisfactory operation when heavy oils are used. Often his objections to the introduction of a system for heavy oils comes from the fact that a considerable amount of theoretical and practical engineering knowledge is required in the design and installation. The heavy oil, two-pipe system has only a slightly higher first cost than the one-pipe system, while the only added operating cost is the small amount of steam required for heating. Under most adverse conditions the cost of steam will not add more than 0.2c. per gal., and this will be many times overbalanced by the favorable price and calorific differentials of the heavy oils.

STORING COAL

Railroads Carrying Out Agreed Program—Facts as to Rolling Stock

WASHINGTON, July 17.—Substantial progress is being made by the railroads in carrying out provisions of the program unanimously agreed upon by them in New York last April, in accordance with which they are to complete by Sept. 1 the storage of coal designed for railroad use, so that after that date the equipment and other transportation facilities may be used to the greatest extent for the transportation of commercial coal necessities.

Forty-four railroads representing 75 per cent of the total mileage of the Class One railroads have reported that during the month of June, they stored 1,821,412 tons of coal. This would mean that each of the 44 roads during the month of June stored an average of more than 41,000 tons.

Including the 1,821,412 tons which was stored during June, the 44 railroads on July 1 had a total of 6,638,812 tons of coal in storage, compared with 4,817,400 tons on June 1.

This would indicate that the railroads are cooperating with the Secretary of Commerce in his efforts to get the industries of this country to lay in their winter coal during the light consuming season—that is, from now until Sept. 1.

The railroads of the United States on July 1 had 190,411, or 8.4 per cent of the freight cars on line, in need of repair. This is the smallest number in need of repair since December, 1920.

The railroads of the United States had on July 1, the latest date available, the largest number of serviceable locomotives, but the smallest number in need of repair for any time since the compilation by the Car Service Division of such reports began in August, 1920.

Serviceable locomotives on July 1 totaled 52,456. This was an increase of 1237 over the number of serviceable locomotives on June 15. At the same time the railroads had 11,450 locomotives in need of repair or 18 per cent of the total number on line.

The railroads of this country also had stored on July 1, 2181 serviceable locomotives in good repair which are being held in readiness for increased traffic demands. From June 15 to July 1, a total of 20,602 locomotives were repaired and turned out of the shops, which was an increase of 1665 over the number repaired during the first 15 days in June.

Despite the fact that loading of revenue freight for the week which ended on June 30 totaled 1,021,770 cars, the greatest number for any one week in the history, the railroads of the United States had on June 30 a total of 63,636 surplus freight cars in good repair.

The net railway operating income of the Class One railroads of the United States in May amounted to $89,999,600, which represented a return on an annual basis of 6.33 per cent on their tentative valuation. The net operating income for the carriers in the Eastern district was at the annual rate of return of 7.72 per cent; the Southern district, 6.72 per cent, and the Western district, 4.43 per cent. The same carriers in May last year had a net operating income of $62,069,000, or 4.46 per cent. In April this year, it was $83,197,800 or 6½ per cent.

The J. L. Mott Iron Works, sanitary supplies, is building a large warehouse with railroad siding on Berley Street, Boston.

Important Work of Trade Associations

Activities Reviewed by Department of Commerce—Secretary Hoover Makes Suggestions in Regard to Extending the Field of Usefulness—Causes of Criticism Considered

BY L. W. MOFFETT

WASHINGTON, July 17.—Completely setting forth the many important phases of work of trade associations and their vital bearing on the efficiency in modern day business, the Department of Commerce yesterday made public a book dealing exhaustively with this important subject. The book entitled, "Trade Association Activities," is a work of thorough-going research, such as never has been attempted before, and unquestionably will be used by business interests throughout the country, as a reference and guide in all the fundamental problems in their lines. Consisting of 368 pages in 16 chapters, together with appendixes, the work deals with the question of trade associations from every possible point of view and involves a full sweep discussion of a multiplicity of subjects and reveals in a striking manner the broad and comprehensive grounds covered by well organized trade associations.

Contributions have been made to the book by a multitude of trade associations in line with the inquiry made by the Department of Commerce to ascertain and illuminate those activities of trade associations which contribute to public welfare. As pointed out in the foreword to the book, the department instituted the work in cooperation with the industries for the elimination of waste, for the extension of trade, and for the improvement in processes of production and distribution. Not alone does the book draw its material from the trade associations, but, reaching out further, it carries material from officials of the Government departments and bureaus, showing the relation of the work of these departments to that of trade associations. It includes contributions from all of the departments of the Government, and recites in a fascinating and informative manner the relationship between the Government and trade associations. The iron and steel, foundry and allied industries, together with the engineering societies, share space in the book, each affording constructive efforts.

Used to Restrain Trade

Necessarily, the book points out that during recent years many of the associations have been subjected to criticism "because certain individuals have used the reputable cloak of trade associations for conspiracy in violation of restraint-of-trade acts." One of the purposes of the book is to show the constructive functions of trade associations in serving public welfare, commerce and industry. Tribute is paid to trade association bureaus of scientific research for improvement of technical processes, the utilization of wider varieties of raw materials, the establishment of standards in quality and grades, simplification of the dimensions of articles, better methods of distribution and the development of higher business ethics. Through activities in insurance, in transportation, in credit information and in promotion of foreign commerce, it is pointed out in the foreword, trade associations have greatly benefited their members and increased national efficiency. Through activities in gathering statistics of production, consumption, stocks and prices, where these have been made equally available to the public, they have contributed to the stability of business and the diminution of speculation and, in fact, it is pointed out many of the national barometers of business and credit which are vital to all business men in formulating judgment "are the work of the trade associations."

The Department of Commerce since its reorganization has been particularly active in cooperating with trade associations to develop progress and efficiency in business along the lines inaugurated. The investigation was undertaken jointly by the Bureau of Census, Bureau of Foreign and Domestic Commerce, and Bureau of Standards, and was supervised by a committee of which F. M. Feiker was chairman.

Secretary Hoover's Introduction

In an introduction by Secretary of Commerce Herbert Hoover, it is declared that the American public is little acquainted with the work of trade associations, which varies widely in the different fields. It is evidently one of the purposes of the book to show all trade associations where they can improve their work. Some of them, it has been pointed out, could well coordinate their work, reduce the number of their associations into a more compact organization and compile more comprehensive and vital statistics than they do at present.

Mr. Hoover, after explaining certain types of associations with limited functions which are frequently mistaken for trade associations, explains the purpose and aim of a trade association. He says it is to deal with all questions of general application in the branch of industry or commerce it serves and so to develop its field that the enterprises in it may be conducted with the greatest efficiency and economy.

"The constructive purposes of trade associations have unfortunately been confused with the minority of activities which have been used as a cloak for action against public interest," says Mr. Hoover, "It is also true that a vast amount of action in public interest has been lost and even great national calamities brought upon us by lack of cooperative action. All who know the situation in such matters realize that the problems of cooperative action are mainly the concern of smaller businesses. The material in this book has been brought together not from the point of view of educating big business, but with the idea that the legitimate trade associations and other forms of business cooperation are the real basis for promotion of smaller businesses.

"If we are to have a comprehensive economic system, it seems to me that the time has come when we should take cognizance of the necessities. The growing complexity of our industrial life, its shift of objective and service, requires the determination of an economic system based upon a proper sense of rightful cooperation, maintenance of long-view competition, individual initiative, business stability, and public interest."

All Activities not Good

Mr. Hoover points out that all trade association activities are not good just as all individual habits are not good until so proved by their reaction on the individual and the community. He suggests that the best way to guide activities into the most constructive and profitable channels is through thorough-going analysis and examination of these activities which seem on the surface to be constructive in their application and results.

Most trade associations, he declares, have evidenced active interest at some time or other in the collection, compilation, preparation and dissemination of statistical material relative to their industries and trades, considered with particular emphasis to production, stocks, shipments or cancellations. Sometimes the greatest desire, it is asserted, has been for data regarding prices and orders. Statistical activity by trade associations has legal limitations, it is explained.

However, he continues, there is no question that the curves in the business cycle from activity to depression have been less disastrous in those industries or trades where accurate lawful statistical data have been available to all. He shows the necessity of statistics "if industry is to march with reasonable profits instead of undergoing fits of famine and feast, if employment is to be held constant and not subjected to vast waves of hardship." Whether these services are to be maintained by the Government or by trade associations, Mr. Hoover says, they must be maintained "if we are to have an orderly economic life."

Demand from Legislatures

Dealing with the question of legislative activities, Mr. Hoover says that the open preparation and presentation of views of different trades upon all sorts of questions of public interest is constantly in demand by legislatures, and that this method of presenting the facts is far more consonant with proper development of public life than the private lobbying of the few or powerful. With regard to simplification and standardization, Mr. Hoover says that the elimination of waste can be accomplished only by collective action in a trade. Hundreds of millions of dollars are declared to have been saved through the adoption of programs of simplification and standardization, not only to the business groups concerned, but to the ultimate consumer. Trade association work is given credit for proving itself the most potent organized influence in the study of cost in industry and trade. The trade association is declared to be a trusted and reliable clearing house for vital credit and collection information. While it is true, Mr. Hoover states, that credit information has been used for restraint of trade, this is not its primary or usual purpose and obviously should be prohibited. The stamping out of unfair competition and misrepresentation and the adoption of fair practice principles are held to have been real accomplishments of scores of trade associations in the direction of better business. If the present-day indications of trade associations have real meaning, Mr. Hoover says, the question of the human factor and its mass relation in business will not be approached blindly and without preparation and knowledge.

Elimination of Waste

Taking up the question of insurance, the Secretary says that, strange to say, there has been little uniformity in State legislation affecting insurance and here in particular the trade association has been instrumental in the reasoned elimination of waste and unnecessary expense. Declaring that public relations—publicity and advertising—has become an exact science, Mr. Hoover says that each trade has its peculiar problems attendant upon merchandising itself or its wares and just so each trade association is proving itself the dominating factor in the development of the public relations of its own business group. It may be cooperative advertising or it may be something more complex. "Whatever it is," it is stated, "it always needs the scientifically trained and guided hand of the trade association specialist backed by unanimous support of the group in telling its story to the public, who must know the truth, the whole truth, at all times."

The trade association in its bearing upon traffic and transportation as an aid for goods to find their way to market readily, is pointed out. There are rate matters, classification, car supply, auditing of transportation bills, the study of competitive transportation agencies, and the real force of such competition. The problem of the cost of distribution and its relation to commercial research is said to be recognized by trade associations with a view to eliminating waste and serving the requirements of consumers. Mr. Hoover states that goods do not find the market with readiness and ease and must be adjusted to demand, an exacting, much sought-after and not too well-defined market. Especially does this apply to export markets and Mr. Hoover says that commercial research by trade associations is proving a real force in this great problem. With relation to industrial research, Mr. Hoover declares this will bring gigantic financial return to industry as a whole in its more general application through trade-association activity.

Government Relations

Dealing with Government relations, Mr. Hoover says:

"Whether the attitude of business be to keep Government out of business or to the contrary, it nevertheless is true that the Government in its manifold activities directly impinges upon commerce and industry at many points. The control of public utilities, the restraint-of-trade acts, the large volume of Government expenditures, all materially affect business, not to mention the legislative problems thrust upon the Government as the result of after-war re-organization. Official trade information, official industrial statistics, official standards, procedure, and practice are being sought by the trades, and the Government is constructively active in cooperation with business to develop these fundamental services."

All of these topics discussed by Mr. Hoover are amplified in great detail in the book.

Commissioner Nelson B. Gaskill of the Federal Trade Commission, in an article expressing his individual views on legal aspects of statistics in his conclusion says in part:

The purpose of this discussion is to show that the service of statistical information as to production costs, volume of production, stocks, sales, and selling prices is a useful and proper activity for a trade association. It is clear that each of these elements of trade information, or all of them combined, can be collected and distributed in a lawful manner and for a lawful purpose. Each and all of them are equally capable of misuse for unlawful purposes. Experience shows that both methods of treatment have been employed. The character of the service, its intent, and the use to which it is put depends upon the spirit of the members of the association projected through the agency which they create. The level of association action will be what its members determine. An effort has been made here to explain the principles underlying the law and the judicial decisions, the reasons for the opposition of the law and the attitude of the administrative agents of the law to certain tendencies, to movements in this or that direction, for a clearer understanding on the part of association members. The present state of the law and the principles which it expresses may or may not meet universal approval. None the less, what trade associations have now to meet is the law as it is, and the tests of conduct are those which the law now establishes.

Legislative Activities

In a chapter on legislative activities, prepared by Attorney Rush Butler of the National Coal Association, Secretary Frederic W. Donahoe of the Refractories Manufacturers' Association, William J. Matthews, Harry Meixell of the National Motor Vehicle Conference Committee, and William Tyler Page, Clerk of the House of Representatives, the concluding paragraph reads as follows:

It must be further remembered that the success of an association in impressing its views upon legislation is in direct ratio to the time in advance of the consideration of pending legislation that such association has used in gaining and interpreting the facts and the views of its membership. If an association and its members have come to agreement and judgment after full consideration, its position is immensely strengthened.

In discussion of the relation of Government departments to trade associations, the State Department says that one of the chief ways in which it can be and is of service to American trade associations is in giving such assistance as it properly can render with a view to promoting and protecting the interests of their members in foreign countries. The War Department says that the Army in time of war will make demands on almost every line of industry and the cooperation of trade associations will be vital to insure success.

Purchasing by the Navy

The Navy Department's statement says at one point:

The Navy's demand for supplies and its methods of purchasing have perhaps helped trade associations in their dealings with the commercial world more in the line of standardization of materials and containers than in any other direction. It is practically impossible even to estimate the Navy's worth to the trade in this particular. It has been such a gradual development and the trade has fallen in line

in such a manner that the standards set by the Navy were adopted as a matter of course and without resistance.

The statement adds that requests from manufacturers to reprint Navy specifications for their manufacturing department are not infrequent, and only recently one of the largest steel rolling mills requested a list of specifications involving over 600 different items for use in their manufacturing department.

The Department of Labor says that it does not accept data through industrial trade association sources but that information as to wages and prices must be taken from the books of individual establishments. Hence, it is pointed out, the only way in which associations can be of service to the Bureau of Labor Statistics is by opening the way for sympathetic consideration of the subjects by their individual members. The statement says, however, that the bureau has accepted statistics in the cases of wage scales made between large employers' associations or group of such associations with district trade-unions or in some cases even National unions; as, for instance, the National Stove Manufacturers' Association concluded a wage scale for all of its members with the National Iron Molders' Union, covering all the members of that organization working in the stove trade.

Iron and Steel Division

The Iron and Steel Division of the Bureau of Foreign and Domestic Commerce contributes the following statement:

The Iron and Steel Division has established its primary trade association contacts with producers of nonferrous metals and manufacturers thereof. It also operates through the National Association of Manufacturers by the establishment of a contact with this organization's foreign bureau, and more lately with a special committee from the steel industry. This division has endeavored to acquaint, as expertly as possible, the foreign field services of the Government with the technical aspect of the iron and steel and nonferrous metals industries in order that foreign markets for these products might be more scientifically analyzed. The division has also been instrumental in the obtaining of foreign contracts for American iron and steel manufacturers. Statistical data relating to iron and steel production and foreign trade of the more important industrial nations are translated and currently compiled from foreign Government publications and made available to the trade. Upon request from the Refractories Manufacturers, Association, the minerals and metals section of this division, in cooperation with the association, has undertaken an extensive investigation of foreign markets for fire brick.

Industrial Machinery Division

The Industrial Machinery Division of the Bureau makes the following statement:

The Industrial Machinery Division endeavors to give thoroughly practical assistance on almost any question that may develop in connection with marketing machinery abroad. In cooperation with trade associations the division has frequently arranged to have adjusted through the field service of the bureau such matters as collection of accounts, trade discriminations, boycotts, labor troubles, and similar matters.

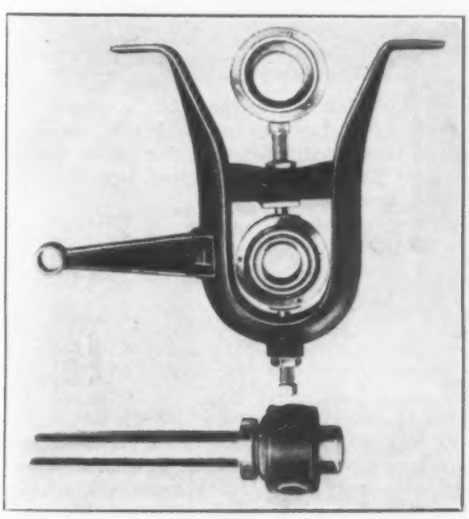
This division's cooperation with trade associations has been effective mainly through specially appointed committees. These committees, acting through the bureau, have been able to arrange for the obtaining of as nearly complete information as possible regarding the distribution methods in foreign countries by which machinery is marketed. Studies attendant upon the economical shipping of machinery abroad and a complete survey of machinery dealers in foreign countries have been other accomplishments of the division. The kinds of machinery with which the Industrial Machinery Division is primarily concerned are those used in industrial enterprises of all kinds, including factories, mines, and the construction of engineering works.

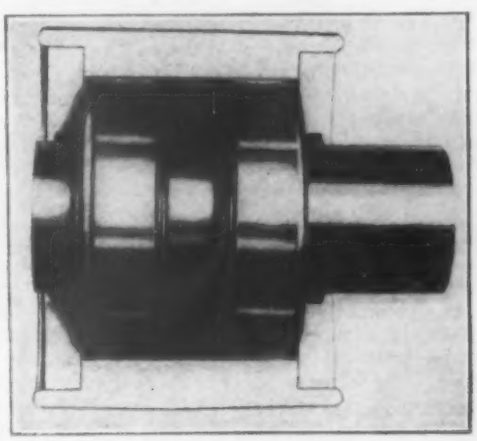
Loose Pulleys and Countershaft Boxes with Taper Roller Bearings

Loose pulleys in sizes from 2½ to 22 in. in diameter, equipped with adjustable taper roller bearings for taking end thrust, are being marketed by the St. Louis Machine Tool Co., St. Louis.

The races on the bearings can be made so thin that loose pulleys down to 2½ in. in diameter may be used by mounting the bearings directly on the shaft. Mounting them on a sleeve is preferred, however, and where this construction can be used it is said that old and worn arbors and shafts may frequently be saved.

The same bearings are also being provided on the company's countershaft boxes, which are made up of a box with proper sockets for adjustment between the screws, and will fit in standard hangers. At both the front and back a felt groove and retainer is provided. The boxes are fitted with suitable adjustable taper roller bearings for the service required, the necessary set and retaining collars being also provided. The boxes may be conveniently put in hangers, already in place. Pressed steel hangers with the boxes are also available.





Loose Pulleys Equipped with Taper Roller Bearings, As Shown at Right, Are Available in Sizes From 2½ to 22 In. in Diameter. A pressed steel hanger with roller bearing countershaft box is at the left. The box may be had either with or without hangers

June Building Construction Declines

Construction work contracted for in June fell off 14 per cent from the May total, according to figures compiled by the F. W. Dodge Corporation, New York. The decline was general except in portions of the Central West. Total contracts awarded during June in 36 States (including about seven-eighths of the total volume of the country) amounted to $371,034,000. In spite of the decline, the figure indicates that a large volume of work was started. The Dodge Corporation states that any month which exceeds $350,000,000 in these 36 States is a heavy month.

The Colonial Steel Co., Pittsburgh, has purchased vacant property, 50 x 135 ft., at 1440-42 Bryan Place, Chicago, as a site for a warehouse and office building to house the Chicago branch of the company.

CONTROL URGED AS MARK FALLS

Gold Basis Urged for Budget, Taxes and Wages—Business Unchanged—More Companies Under Foreign Control

BERLIN, GERMANY, June 26.—No material change has taken place in the iron and steel markets in June. In unoccupied territory the slight increase in activity, which resulted from the collapse of the mark-stabilization attempt of February, March and April, has continued. In occupied territory production continues for stock. The French embargo on transport to unoccupied territory continues, while the attempt to create a *modus vivendi* with France making export possible has failed. Reserves of ore are still being consumed. Smelting activity has declined and coke ovens are idle except on production for local consumption. The fuel supply in unoccupied territory continues sufficient. In April coke imports, which averaged 1,000,000 metric tons monthly in 1922, increased to 4,500,000 tons; but the new mark collapse made English coal about three times dearer than German, and imports in May (although there are no available statistics) seem to have fallen considerably. On June 25, the French announced that all coal supplies in occupied territory were expropriated "in so far as the Franco-Belgian Control Commission needs them;" but it is not likely that the occupying armies mean to entirely prevent the heavy iron corporations from using their own coal. Labor Union reports show a decline in unemployment in the metal industries but the improvement is less marked than is usual following declines in exchange.

In spite of official pessimism there is no sign of a general collapse of industry which would make the Cuno cabinet abandon its policy of passive resistance. The one possibility of breakdown lies in the decline of exports, which might make it impossible to import foodstuffs, fuel and other necessaries. Hitherto imports have been paid for not with marks, but with high-exchange bills received in exchange for exports. Ninety-day bills drawn for exports delivered prior to the French embargo have until lately been falling due. A complete cessation of exports from the Ruhr means a decrease in the supply of foreign currency; and in the present exchange situation this decrease might cause serious difficulty. The last export figures in values show for April, however, an increase; the total value sent abroad being 435,800,000 gold marks against 360,600,000 gold marks in March, and a monthly average of 330,800,000 gold marks in 1922. Considering the curtailment of Ruhr exports, the April figure is favorable and if unoccupied Germany's foreign business continues to compensate, the stoppage in the Ruhr will probably be offset. Iron and steel imports in the first quarter of 1923 show a large increase over those of the same quarter of 1922, while exports as a whole have slightly declined.

The machinery and engineering works show increased activity in the past few weeks, the exception being locomotive building, in which business has been slack since last year. The chief improvement has been in agricultural machinery and machine-tool manufacture. The latest report shows that 750,000 persons are engaged in this work. In 1922 machinery imports were 10,700 metric tons, or 2 per cent of the exports of 491,000 tons. The export duty on machines was early this year reduced to 1 per cent; and during the brief mark stabilization period in the spring a general reduction, in part complete abolition, of export duties was initiated but the new exchange fall has reduced German prices so much below foreign that a temporary increase in the duties is contemplated.

The iron, steel and machinery industries are much concerned over Government plans to regulate wages by legislation. The demand for this legislation is chiefly from Socialist and Labor Union quarters, but the Federal Minister of Labor favors the measure in principle. The plan is connected with the latest collapse of the mark. The depreciation has brought out numerous projects for establishing state and private business, wholly or partly, upon a "firm mark" basis, which means that business would continue to be done in paper marks, but that the amount of marks changing hands would be increased automatically as the currency declined in buying power. Under present conditions the state finances suffer from the fact that all direct taxes are paid in much worse marks than they are assessed in, the taxpayer escaping the greater part of his intended burden. A good instance is the fact that although the income tax rates rise as high as 60 per cent the total value of income tax receipts in 1922 was only $123,000,000. The workmen complain that they cannot obtain increases in their nominal wages proportionate to the mark's depreciation. This complaint is true, although only at times of particularly rapid depreciation. The suggestion is made that the budget, taxes, wages and perhaps business transactions of all kinds be calculated in fictitious "gold" or "price index" marks. This system is partly in force now. The Prussian and Bavarian savings banks enter paper-mark deposits at their current gold value on the day of deposit and repay the depositors sufficient paper marks to buy the same quantity of gold on the date of withdrawal. Also, paper-mark public loans expressed in values of rye, wheat, coal and potash are now practically the only kind of loans being raised. A "fixed value" wage automatically changing in accord with prices was long in force in Austria, and is still in force for state salaries, but it is condemned by the new Austrian Minister of Finance. German iron and steel employers oppose a "firm mark" wage on the ground that if the mark-exchange recovered, the cost of living would not immediately decline, so that the gold wage paid might become so high that international competition would be impossible.

The mark collapse has brought another great price rise. On June 1, commodity prices were 14,639 fold higher than in 1914, against 8237 fold on May 1, and 2054 fold on Jan. 1, and the increase in June will probably prove to be the greatest yet recorded. In the past three weeks coal prices have been raised twice, and pig iron and Steel Syndicate prices several times. The Railroads council increased freight rates 250 per cent on July 1. From June 25 the price of standard Ruhr (Foerderkohle) coal has been 528,000 m. per metric ton, compared with 221,200 m. on June 1 and about 12.50 m. prior to the war. The corresponding figures for foundry coke are 805,200 m., 338,700 m. and 20 m. per metric ton. Latest pig iron prices from June 24 (in marks per metric ton) are:

Hematite	2,712,000
Foundry iron, No. 1	2,682,000
Foundry iron No. 3	2,679,000
Siegerland steel iron	2,337,000
Spiegeleisen	2,688,000

An extra of 1,039,000 marks per ton is added for hematite smelted from foreign ore and with foreign fuel, with proportionate supplements for other qualities. Latest Steel Syndicate prices from June 25 (in marks per metric ton) are:

Ingots	2,845,000
Blooms	3,214,000
Billets	3,425,000
Slabs	3,542,000
Structural Forms	4,015,000
Bars	4,038,000
Wire Rods	4,295,000
Sheets:	
5 mm. and heavier	4,551,000
3 to 5 mm	5,099,000
1 to 3 mm	5,964,000
Less than 1 mm	6,562,000

The Phoenix A. G. is to increase its capital from 375,000,000 to 675,000,000 marks. This transaction has caused much comment, because the new shares are to be taken over entirely by a Dutch syndicate, which will grant a credit, at nominal value, although Phoenix quotes at over 1,000,000 on the Berlin bourse. In some quarters this deal has resulted in a demand for measures against so-called "uberfremdung" (buying up of native undertakings by foreigners). It is also alleged that the aim is to transfer the main interest in the corporation abroad in order to evade taxation. Lately many German corporations have complicated their real ownership by association with holding companies abroad (mostly in Switzerland). Some of these holding companies are entirely German; and by cheaply selling them interests in native German concerns capital, while remaining in German individuals' hands, is transferred to foreign countries.

New Steel Foundry at Fairfield Car Works

A Basic Open-Hearth Plant in the South Where Castings Can Be Produced on Large Production Basis—Modern Facilities for Handling Materials, Sanitation and Comfort of Employees Are Features

THE steel foundry of the Tennessee Coal, Iron & Railroad Co., at its Fairfield Car Works, Birmingham, Ala., recently completed, was designed for the purpose of manufacturing miscellaneous car castings on a production basis for use at company's car works and elsewhere. Also the manufacture of large and miscellaneous general steel castings required for the various works of the company in the Birmingham district. This foundry was put in operation during April, 1923, the first heat being poured April 14. A brief description of the plant follows:

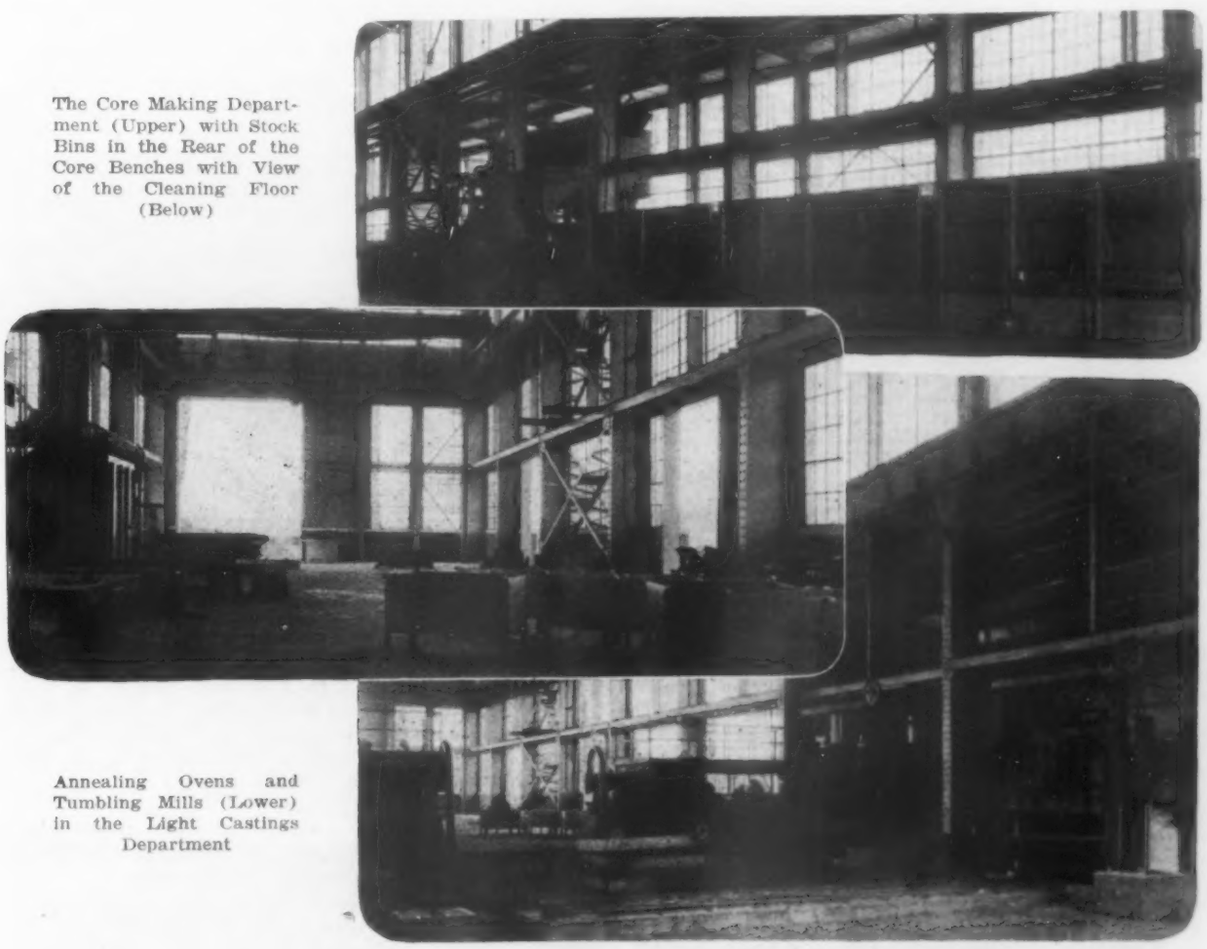
As one approaches the building he is immediately impressed with its massive appearance. The exterior consists of a red shale brick wall with concrete coping, extending 5 ft. above yard level. Above the wall large areas of glass prevail. The building consists of three bays: The main bay is 80 ft. wide and 400 ft. long; on each side of this main bay is a lean-to, the east lean-to being 50 ft. wide and 400 ft. long and the west lean-to being 50 ft. wide and 450 ft. long. The combined floor area of the three bays is 74,500 sq. ft.

Liberal allowances have been made in the design of the building for heights. In the main bay the crane runway is 45 ft., the bottom chord of roof trusses being 65 ft. above floor level, while in each one of the lean-to bays the crane runway is 31 ft. and the bottom chord of roof trusses 41 ft. 8 in.

The roof of the main bay is of corrugated asbestos protected metal. Eight 6-ft. diameter Swartwout ventilators have been provided. The roofs over the two lean-tos consist of a cast-in-place gypsum slab, covered with composition roofing.

In the north end of the main bay, the crane runway is extended 100 ft. outside of building. The area under this runway is used as a flask storage, the flasks being transferred in and out of the foundry as needed by means of overhead cranes. This is a splendid feature and saves a great deal of floor space as only the flasks in actual service will be found inside of the building. Adjacent to the flask storage runway on the east side is located a stock yard, 83 ft. wide and 200 ft. long, having a crane runway with an elevation of crane rail 45 ft. above ground level. This stock yard is for the storage of pig iron, scrap, etc., used for charging in open-hearth furnaces. Material is received in standard gage gondola cars, magnets being used for handling.

A material track having an inclined approach enters the building from the south and passes over concrete storage bins at an elevation of approximately 12 ft. above floor level. The storage bins are inclosed and form a part of the building used for the storage of all sand, clay, limestone, etc. These materials are shipped in drop bottom hopper cars and dumped directly into



The Core Making Department (Upper) with Stock Bins in the Rear of the Core Benches with View of the Cleaning Floor (Below)

Annealing Ovens and Tumbling Mills (Lower) in the Light Castings Department

bins. An overhead monorail telpher system is provided to deliver these materials to sand mills and charging floor.

Excellent crane service is provided throughout the foundry. The main bay has three cranes, one of 75-ton capacity and two of 25-ton capacity each. The large crane is used almost exclusively for handling hot metal. All of these cranes have auxiliary hoist. In the west lean-to there are also three cranes, two of 20-ton capacity and one of 10-ton capacity, the two 20-ton cranes being used to handle hot metal ladles and moving of molds in multiples and the 10-ton crane used exclusively in the cleaning and shipping department. In the east lean-to there is provided one 10-ton capacity crane for general service.

On the west side and close to the foundry building is located a brick building of which one portion is used as a chemical laboratory, completely equipped. The balance is for offices for the foundry superintendents and clerks.

Tar and Gas Fired Open-Hearth Furnaces.

In the north portion of the east lean-to are located two 25-ton basic open-hearth furnaces of the stationary type, elevated sufficiently to accommodate the charging floor which is 12 ft. above the main floor level. The pouring sides of the furnaces extend slightly into the main bay of the foundry, permitting pouring of metal into ladles suspended by cranes in the main bay. The furnaces are designed for the use of tar and by-product gas as fuel and are therefore provided with air regenerating chambers only. The simple arrangement of the stack dampers and air valves and also the direct course of the flues to the stack are important features in the design of these furnaces. The air valves, dampers, and furnace doors are all electrically operated from a central station on charging floor, directly opposite each of the furnaces.

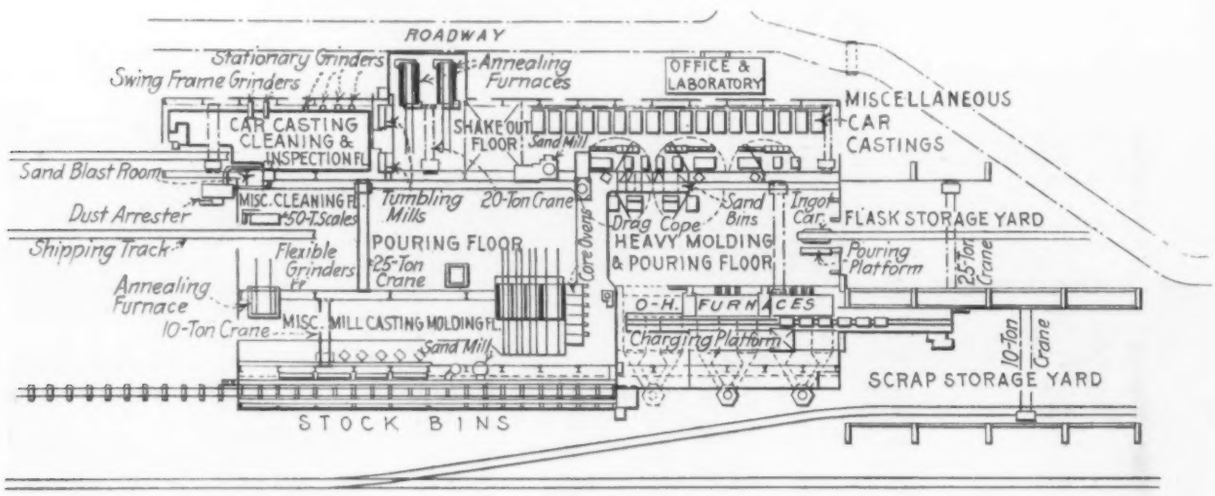
The furnace charges are made up in the stock yard, then placed on cars on a charging floor extension extending under crane runway. Each car will accommodate three charging boxes. Magnets are used for handling materials in the stock yard. A 3-ton high type Wellman-Seaver-Morgan charging machine has been provided to manipulate the cars and charge the furnaces.

The west bay of this foundry is intended exclusively for the manufacture of miscellaneous car castings and other small castings on a production basis. Only machine molding is done in this bay. Five Herman jar and roll-over stripper type machines have been provided for this purpose. Four of these machines have been placed in one group for production work. The fifth machine is separated from the others, intended for special molding. Directly over this group of machines are elevated sand bins from which sand is delivered directly into the flasks placed on jarring machines. These bins are of steel construction.

The sand is delivered into them from an 8-ft. No. 3 Simpson intensive foundry mixer, where sand is prepared and discharged into an elevator, delivering on a belt conveyor which discharges sand into any one of the bins. An individual scraper at each bin, operated from the mixing platform, is used to deflect the sand into the bins. For molding the flasks are placed on the molding machines by means of jib cranes with electric hoists. The completed molds are transferred from the molding machines by the same jib cranes and placed alongside of the machines on skids, each skid accomodating four complete molds. These skids are then transferred by means of an overhead traveling crane and placed in pouring position on the floor. The hot metal required for this section of the foundry is supplied by transferring the ladles on a transfer car from the main bay into this lean-to.

Gas-Fired Annealing Furnaces

After being poured the molds are transferred on the same skids to the shake-out floor. A Herman plain jarring machine, elevated on a high foundation, is used for shaking out the flasks. The castings, after being flogged, are placed on grids and then charged into the annealing furnaces, there being two of these furnaces of the car type, each 7 ft. 4 in. wide and 28 ft. 6 in. long. High pressure by-product gas is used as fuel. After being annealed the castings are cleaned by means of two 48-in. diameter exhaust tumbling mills and after tumbling, castings are further cleaned by means of flexible and stationary grinders.



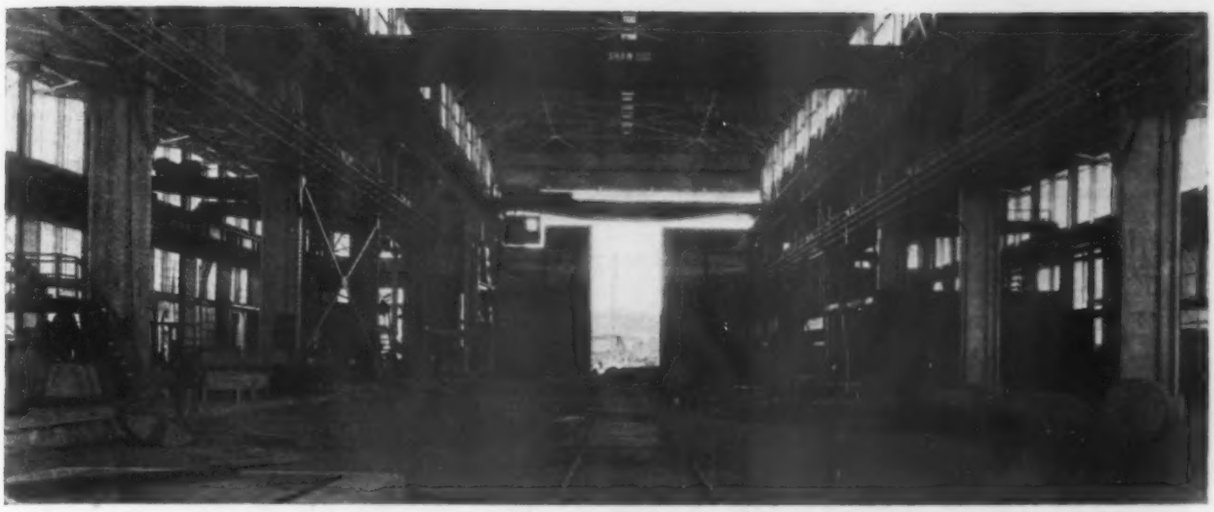
General Lay-Out of the New Steel Foundry

The shipping room is located at the extreme south end of the lean-to. Wood block floor construction is used in cleaning and shipping departments.

The main bay is used for the molding, pouring and cleaning of large and miscellaneous castings for the Tennessee Coal, Iron & Railroad Co.'s own requirements. The equipment provided in this bay consists of four gas fired mold drying ovens, one Cay type 16 ft. x 17 ft. annealing furnace and one 12 ft. x 16 ft. sand blast room. Also two large Herman jar, roll-over and stripper machines have been provided. The sand bins for these machines are combined in the same unit with the sand bins used for the west lean-to and fed by the same equipment as before described.

Shipping tracks and west lean-to extend approximately 50 ft. into the building. Large scales are provided adjacent to each track for the weighing of all castings before shipment is made.

All of the east lean-to, with the exception of that portion occupied by the open-hearth furnaces and charging floor, is used for sand mixing and core making. Two sand mills are provided, one small 6-ft.



Looking North in Main Bay, Showing Molding Floor with the Pouring Side of the Open-Hearth Furnaces in the Right Background

No. 2 Simpson mill used for mixing core sand and one large 9-ft. Frost mill for foundry sand.

A Modern Core Department

For the making of cores, a long continuous bench is provided with overhead sand bins of wood construction. The sand is transferred from the core mixing mill to these bins by means of dumping buckets carried by a 2-ton monorail trolley. For the drying of cores, six 6-ft. x 12-ft. gas fired core ovens are installed. The cores placed on portable racks are transferred from the core making department to the core ovens by means of automatic storage battery lift trucks. The cores are also transferred for use in the various parts of the foundry in like manner. Concrete runways or floors have been provided for these trucks to travel on.

The mixed foundry sand from the large Frost mill is also conveyed in boxes to various points in the foundry by means of these same automatic lift trucks and overhead traveling cranes.

The extensive employment of heat-measuring instruments constitute one of the features of this foundry and, as a result, guesswork is eliminated and definite results are obtained in annealing and drying operations.

The Core Ovens and the Mold Drying Ovens, All Gas-Fired

The Light Casting Department Showing Jolt Roll-Over Machines and Sand Bins

The annealing furnaces are equipped with Leeds-Northrup recording potentiometers with a range from 200 to 1800 deg. Fahr. Recording instruments are located in the laboratory where the foundry superintendent is furnished with complete and continuous record. The mold drying and core ovens are equipped with recording thermometers of the Bristol type.

Another feature is the fuel for annealing and drying of cores and molds, that is, the use of Service Combustion Engineering Co.'s system of burning by-product coke oven gas under high pressure. The gas, delivered to the plant at a pressure of from 10 to 20 oz., is then compressed and delivered to the furnaces at from 10 to 15 lb. pressure. This system has been found economical and satisfactory.

The estimated capacity of this foundry is approximately 1400 tons of steel castings per month, ample allowances having been made for losses.

Will Deepen Canal to Jones & Laughlin Land at Hammond, Ind.

In view of speculation as to when the Jones & Laughlin Steel Corporation, Pittsburgh, will develop the property which it recently acquired at Hammond, Ind., a statement issued by C. A. Westberg, vice-president of the East Chicago Co. is of interest. Mr. Westberg stated that in accordance with the agreement made between the East Chicago company and the Jones & Laughlin company at the time of the purchase of the property, he will award a contract to a dredging company for the deepening of the Indiana Harbor canal from the Standard Oil Co.'s docks to White Oak Avenue. This work will probably take about a year to complete and will make the waterway navigable from Lake Michigan to the proposed slip of the Jones & Laughlin company west of White Oak Avenue and north of the present canal. Col. Walter J. Riley, banker at East Chicago, Ind., had the following to say regarding the project:

"It is possible and probable that in the near future sketches will be made for a possible erection at some future time of a steel plant on the Jones & Laughlin property. Whether or not the plant will ever be erected is entirely problematical, as up to the present time no decision has been arrived at or even considered by the officials of the Jones & Laughlin Steel Corporation. However, the preparation of the land itself for a steel plant has been considered and it may be that a turning station will be dredged on the property and that the portion of the property which would be eventually occupied by the first unit of a steel plant will be filled in and prepared for the construction of a plant, should one be decided on in the future. It is safe to say that it would require between one and two years work with dredges and sand-suckers to construct the slip and turning basin and to bring that portion of the property to a level on which a plant could be constructed."

Steel & Tube Company Injunction Case Submitted to Chancellor

At the conclusion of argument by counsel for the Steel & Tube Co. of America and the Allied Chemical & Dye Corporation before Chancellor Wolcott at Wilmington, Del., last week on the preliminary injunction restraining the Steel & Tube company from distributing its assets to stockholders the chancellor reserved decision in the case. A decision is expected some time prior to Aug. 7, the date of the scheduled meeting of Steel & Tube stockholders to take action on retirement and reduction of stock.

In his argument before Chancellor Wolcott as to whether the Steel & Tube company should not be permitted to distribute to its stockholders the proceeds of the sale of its properties and assets to the Youngstown Sheet & Tube Co., William S. Hilles, counsel for the Allied Chemical & Dye Corporation minority stockholder in the Steel & Tube company, contended that such distribution would render it impossible for Steel & Tube, in case the sale is later set aside to make restitution to the Youngstown company for the properties.

In his argument for the Steel & Tube company, Joseph P. Cotton of New York took the position that as the sale of the company's properties and the price received have been approved by the chancellor, there appears no reason for restraining the distribution to stockholders of the proceeds of that sale. By his former action, he said, the chancellor had in effect approved the sale of the properties and distribution of proceeds.

Western States Organize to Fight Pittsburgh "Plus"

Authorized representatives of the legislatures of Illinois, Wisconsin, Minnesota and Iowa met at Chicago, July 13, to decide upon a plan of action in a campaign against the Pittsburgh basing point practice in the steel industry. Senator John Denvir acted as temporary chairman of the committee representing the Illinois legislature, whereas the other three States had the following spokesmen: Clifford L. Hilton, attorney general of Minnesota; Ben. J. Gibson, attorney general of Iowa; John Fletcher, assistant attorney general of Iowa; Herman Ekern, attorney general of Wisconsin. The States plan to collaborate with the attorneys of the Federal Trade Commission when they make their rebuttal in the Pittsburgh base case this fall. The four States have appropriated a total of approximately $55,000 for the campaign and it was announced that private individuals will subscribe $45,000 more to make an even $100,000.

Elimination of Many Styles of Woven Wire Fence Recommended

WASHINGTON, July 17.—Wire fence manufacturers representing at least 85 per cent of the capacity of the United States at a conference here last Wednesday and Thursday with W. A. Durgin, chief of the Division of Simplified Practice, Department of Commerce, recommended the elimination of 87.5 per cent of the styles of woven wire field and poultry fences and 93.4 per cent of fence containers. It was recommended that no rolls of poultry fence be manufactured except 10 and 20 rod rolls and that no rolls of field fence be manufactured except 10, 20 and 40 rod rolls. A. G. Moore of the Fence Institute, and chairman of the committee representing the fence manufacturers, declared that "if the above styles are adopted by the entire fence industry, as recommended, the styles now made by 27 manufacturers will be reduced from 552 styles to 69, and considering all of the different sized packages as previously made, there was a total of 2072, while in the simplified program there are only 138 packages."

Mr. Moore added: "In case the unnecessary styles are cut out and we manufacture nothing but the different styles suggested by the manufacturers in the simplified program, it means only a reduction of 6.3 per cent of the total amount of fence made. This does not necessarily mean that this 6.3 per cent means a reduction in the consumption of fence, because other styles as suggested will be used in place of these special styles we are trying to eliminate."

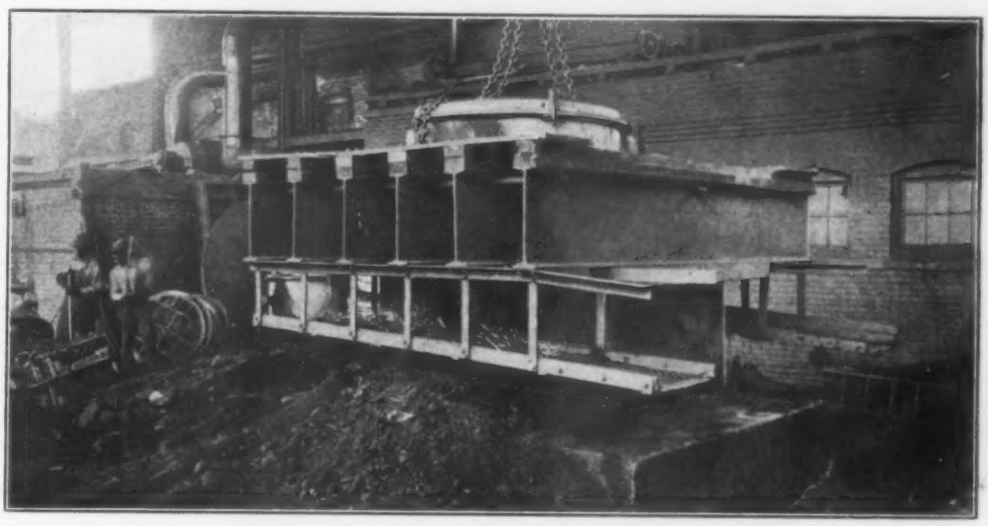
The New London Ship & Engine Co., New London, Conn., has the distinction of being the only New England shipyard, as far as is reported, operating day and night shifts. The company has a sizable Government contract. In addition, the recent completion of new ways has enabled the company to take on much additional work. Approximately 800 hands are employed.

SHAKING-OUT MADE EASIER

Less Breakage of Heavy Flasks—Labor and Labor Turnover Reduced

One of the most arduous and fatiguing jobs about a foundry is the shaking-out of heavy flasks by the old-fashioned method of sledge hammers, crowbars and the use of brute strength on the part of laborers. There is usually considerable breakage of flasks, together with heavy turnover of labor in this department of the foundry.

To ameliorate this condition, the Laidlaw Works, Worthington Pump & Machinery Corporation, Cincinnati, has developed the machine illustrated, for shaking-out heavy flasks. This device has reduced the number of men formerly employed in the work of shaking-out, does the work in much quicker time, and has materially reduced the flask breakage on dry sand work. At the same time, the use of the machine has materially reduced the turnover in shake-out labor.



Device For Shaking-Out Heavy Flasks. Reduced labor force, reduced labor turnover and lessened breakage of flasks are said to result from use of this machine. A Herman bumper with a table 6 x 10 ft. forms the basis of the machine, I beams being riveted to the table. Screens at each side separate the gaggers from the sand. Pits holding three carloads of sand are provided on the long sides; these are cleaned out by crane each shift

A Herman bumper is used as a basis for the shake-out machine. The bumper has a table 6 x 10 ft., and is set on a concrete base above the floor level, with the top of the I-beams about 12 ft. above floor level. The I-beams are riveted to the table, and are spaced on 2-ft. centers. Twenty-four-inch beams are used, this size having been found to be the one best adapted for the work, in that this elevation above the table top is necessary in order to get the proper angle of repose for the free flow of material as it is shaken out of the flask, and it also prevents the sand, when shaking out, from piling up above the top level of beams. Wooden shoes are bolted to the tops of the I-beams to prevent wear and tear from contact with the flasks, and as a further safeguard, a second wooden plank is spiked on top of the shoes to facilitate renewal. These planks are generally renewed every ten days.

The I-beams project for 2 ft. over the sides of the bumpers on the pit sides, as shown, to accommodate screens, which are bolted to the I-beams, and which serve to separate gaggers and refuse material from the sand.

On the two long sides of the machine, pits 14 ft. long, 7 ft. wide and 42 in. deep are provided. These accommodate three cars of sand, and are cleaned out once each shift by means of a grab bucket attached to an electric crane which serves the shaking-out machine.

Slight Decrease in Employment in Iron and Steel Plants

WASHINGTON, July 17.—Employment in the manufacture of iron and steel and their products showed a decrease of 0.16 per cent in June when compared with May, according to the United States Employment Service of the Department of Labor while a decline of 0.67 per cent was shown in the metal and metal products. The paper and printing industry showed the greatest decline in employment, or 4.4 per cent; vehicles for land transportation decreased by 2.5 per cent; stone, clay and glass products by 1.6; textiles and their products by 1.2. The increases noted in employment were: 4.9 per cent in leather and its finished products; 4.8 in beverages; 2.8 in food and kindred products; 0.94 in miscellaneous industries; 0.86 in railroad repair shops; 0.68 in tobacco manufacturing; and 0.24 in chemicals and allied products.

Steel Institute Letter to the President

Owing to the omission of a period in the punctuation of the letter of directors of the American Iron and Steel Institute to President Harding, as published in THE IRON AGE of July 12, the meaning of two sentences was not made entirely clear. Referring to the total abolition of the 12-hr. day at the earliest time practicable, the two sentences should have been punctuated as follows:

"This means the employment of large numbers of workmen on an eight hour basis and all others on a basis of ten hours or less. Without an unjustifiable interruption to operations, the change cannot be effected overnight."

Sheet Sales, Shipments and Production Decreased in June

Substantial decreases are shown in the June report of the National Association of Sheet and Tin Plate Manufacturers in shipments, sales and production of sheets as compared with the previous month. June sales were down 70,000 tons as compared with those of May; production decreased approximately 42,000 tons, while shipments were 45,000 tons less than in the previous month. Unfilled orders decreased about 48,000 tons. A decrease of about 3000 tons in the stock on hand awaiting shipment at the end of June as compared with the month before, is more than offset by an increase of almost 6500 tons in unsold stocks. Net obligations, arrived at by deducting the unshipped and unsold stocks, at the end of June were 357,599 tons, equal to about 1.6 months' production at the June rate of output.

Figures in net tons for June compare with those for the two preceding months as follows:

	June	May	April
Capacity	392,000	420,000	385,000
Capacity reporting	69.8%	70.0%	72.8%
Sales	172,637	242,624	193,904
Production	218,432	260,006	254,808
Shipments	233,128	278,059	253,563
Unfilled tonnage	503,175	551,139	577,969
Unshipped stocks	115,649	118,384	115,577
Unsold stocks	29,827	23,397	24,470

New Merchant Mill of Tennessee Co.

Eleven-inch Unit of Fairfield Plant Near Birmingham —Continuous and Looping Trains, Cooling Beds, Continuous Furnace and Roll Racks Features

A NOTABLY modern merchant mill has recently been put into operation at the Fairfield steel works of the Tennessee Coal, Iron & Railroad Co., Birmingham. By this addition, the company can meet the demand for certain merchant mill products in the South, especially concrete reinforcing bars.

The mill was built by the Tennessee company, and consists of a 16-in. 6-stand continuous roughing train, a 12-in. 4-stand, continuous train, an intermediate looping mill of three 12-in. stands, and a finishing stand provided with 11-in. pinions, making it possible to use either 10-in. or 12-in. rolls for finishing. It is estimated that the capacity of the mill will be 10,000 tons per month. The principal products will be ⅜ to 1⅝-in. plain and deformed rounds and squares, and small flats up to 3-in. in width and 1 in. in thickness.

The main mill building is of standard steel mill building design, 80 ft. wide by 840 ft. long, with full ventilating monitor sash extending the entire length of the building. The crane span is 75 ft. 6 in. The elevation of the crane rail is 27 ft. 6 in. above the floor line. The mill end is provided with a 5-ton electric overhead traveling crane and the shipping end is provided with a 15-ton e.o.t. crane with a double drum hoist and equipped with spreader beam for handling long bars up to 80 ft. in length. Adjacent to the mill building is the motor house which is 43 x 280 ft., also of steel mill building design, with a brick wall partition between motor house and mill. The crane span is 39 ft. The building is served by one 25-ton traveling crane with a 10-ton auxiliary.

Billets of 4 x 4-in. section ranging from 13 to 22 ft. in length are delivered to a billet yard runway where they are handled by a 25-ton e.o.t. crane to a storage bed located in the runway adjacent to the entering end of the merchant mill building.

The billets as needed are placed by the billet yard crane on inclined skids where they are pushed by hand to the approach table of the reheating furnace. A small motor driven charger mounted on a track over and parallel to the approach table pushes a billet endwise into the reheating furnace. A mechanical pusher then pushes the billets sidewise through the furnace, and they are discharged from the furnace by pinch rolls into a 4 x 4-in. hot billet shear, to be sheared to the required lengths before entering the 16-in. 6-stand continuous mill.

The heating furnace is of the continuous type, 23 ft. wide inside the brickwork by 45 ft. 9 in. from center line of charging door to center line of discharge door. The furnace was designed to heat an average of 30 tons of steel per hour. The stack is 4 ft. 3 in. in inside diameter of brickwork, 120 ft. high, with damper controlled by a Carrick furnace regulator. Coke oven gas is used for fuel and is brought to 12 burners placed in the discharge end of furnace.

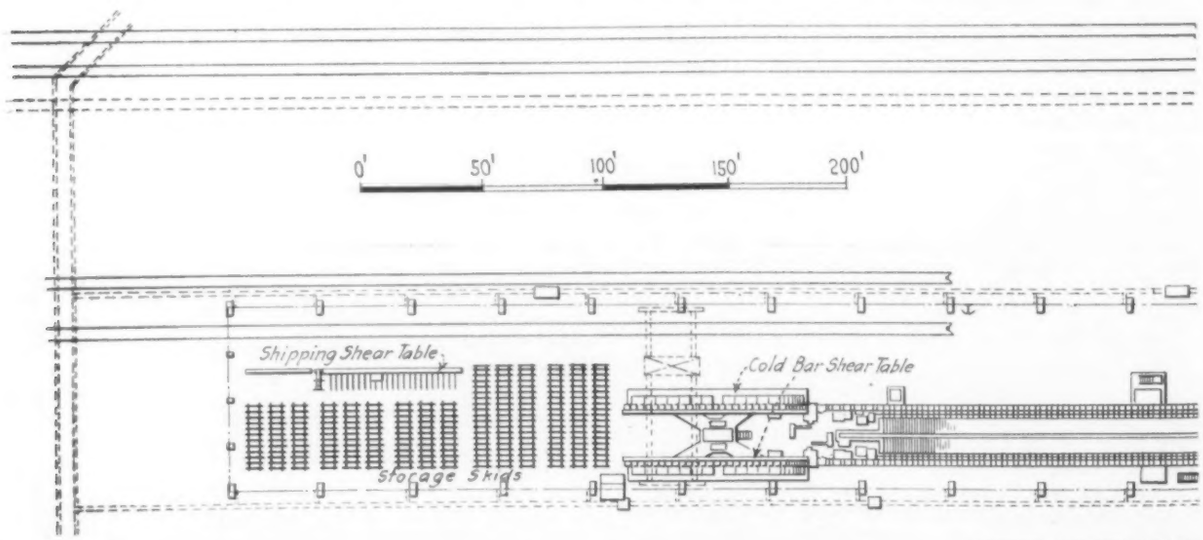
The burners were designed and built by the Surface Combustion Co., New York, and are of the low pressure type with water-cooled nozzles. They are equipped with diaphragms which operate governor valves leading to the gas line and maintain the gas at atmospheric pressure. At this pressure the gas is mixed and carried into the furnace with blown air supplied by a fan of 12,000 cu. ft. per min. capacity at 15 in. water column pressure. The air to the fan is taken from a wind-box placed over the roof of the furnace where its temperature is raised to approximately 225 deg. Fahr. Short water-cooled skids are placed at the charging end of the furnace where the flue gases escape, but the remainder of the hearth is equipped with plain 2½ x 6½-in. steel skids placed in the brickwork.

The 16-in. 6-stand continuous mill is driven by an Allis-Chalmers 1500-hp. induction motor, of 593 r.p.m. full load speed. This motor is connected by a flexible coupling to a Fawcus primary reduction drive which in turn drives the Fawcus main mill drive consisting of cut herringbone spur gears mounted in cast iron housings. This drive as well as the 16-in. mill is shown in one of the accompanying illustrations. From the 16-in. mill the bar passes over a roller table in which is placed a 2 x 2-in. hot billet shear which is used both for cropping and cutting the bars to desired lengths before entering the 12-in. continuous mill.

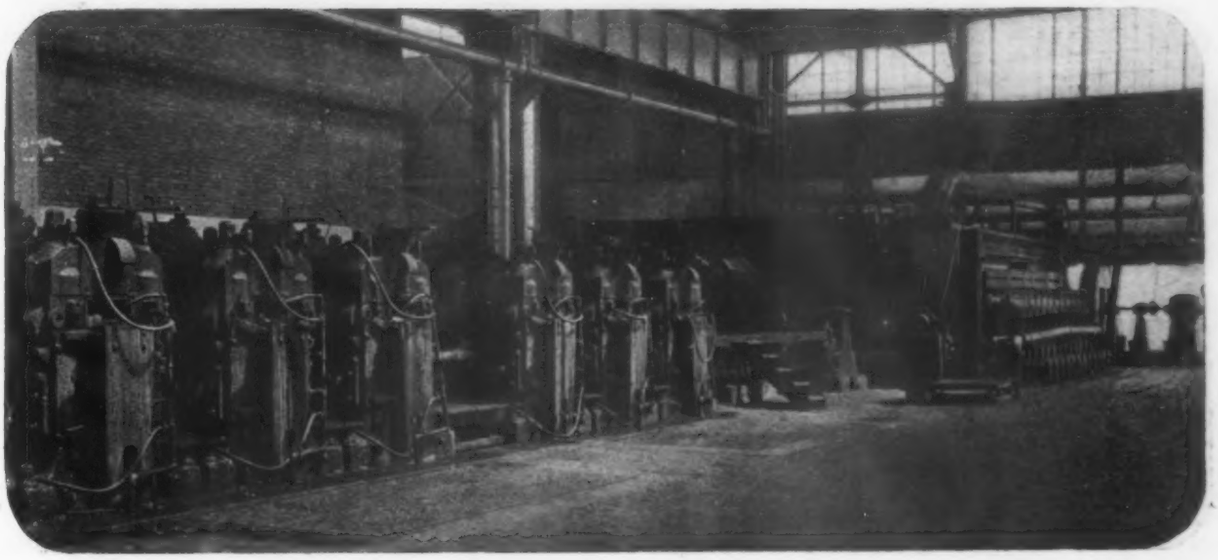
This 12-in. mill is driven by a 1500-hp., Allis-Chalmers Kraemer set, of 712 r.p.m., base speed; 890 r.p.m. maximum, and 540 r.p.m. minimum. A Fawcus primary and main mill drive is also used on this mill similar to that used on the 16-in. mill.

The 3-stand 12-in. intermediate looping mill is driven by a 1250-hp. Allis-Chalmers Kraemer set, of 570 r.p.m. base speed; 710 r.p.m. maximum, and 430 r.p.m. minimum, through a Fawcus gear set.

The finishing stand is driven by a 500-hp. Allis-Chalmers Kraemer set, of 712 r.p.m. base speed; 888 r.p.m. maximum, and 540 r.p.m. minimum. This finishing stand is driven by a Fawcus combination reduc-

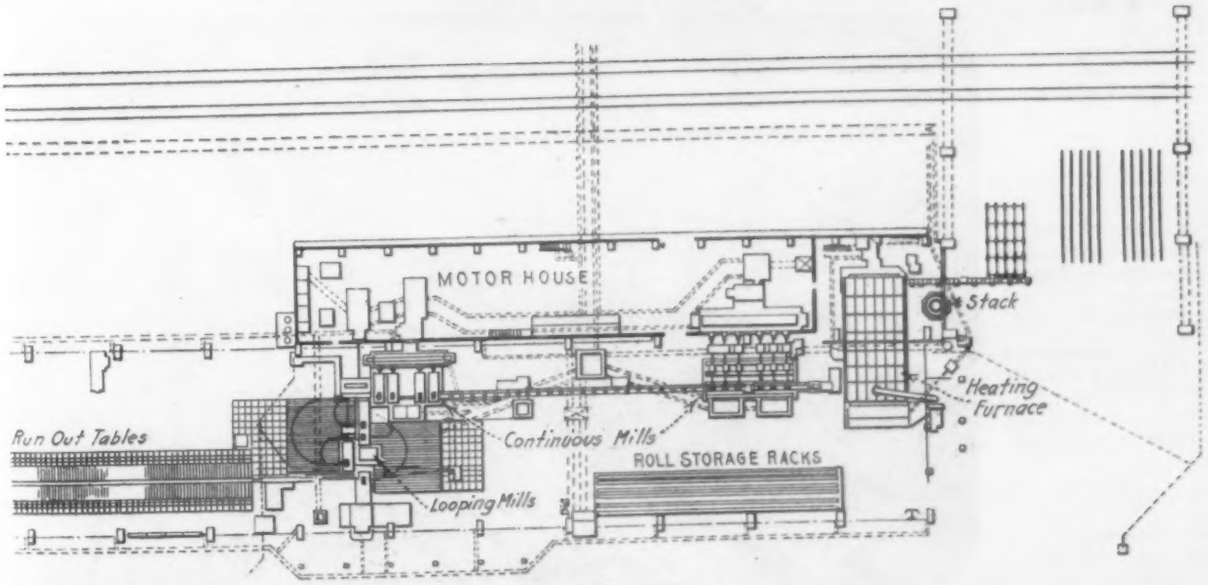


General Layout Show-

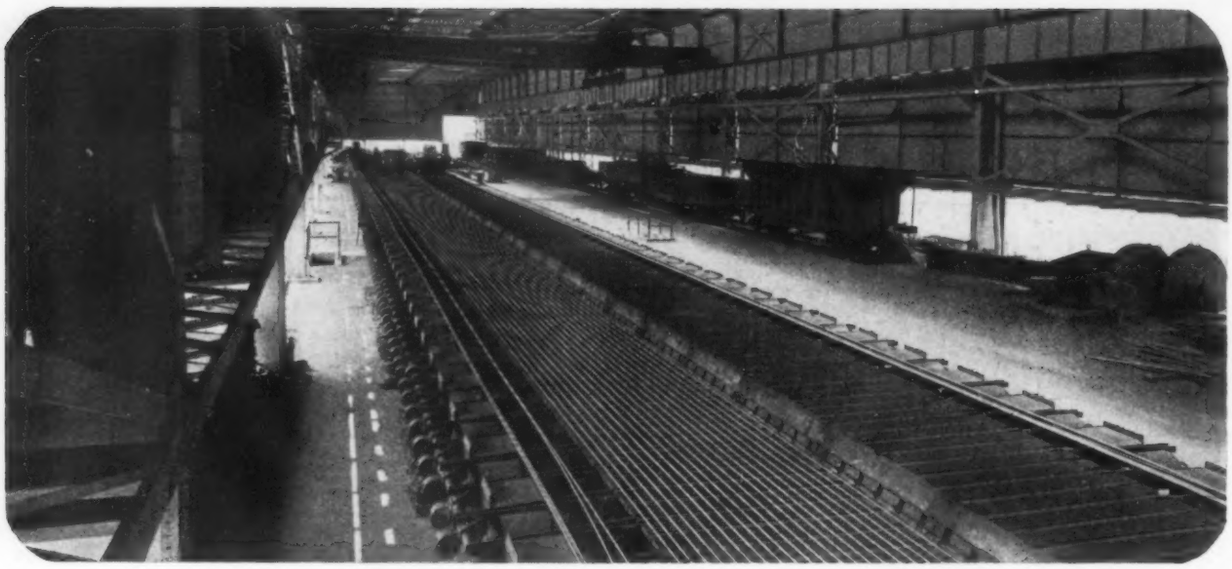


The Six Stands of the Continuous Roughing Rolls with the Continuous Heating Furnace. The coke oven gas burners at the discharging end of the furnace are conspicuous and above the furnace end may be seen the air supply pipe leading hot air from the furnace area to the fan at the extreme right, provided for the gas burning installation

In This General View of the 11-In. Mill of the Fairfield Steel Works, are the Roll Racks in the Foreground and the 16-In. Continuous Roughing Rolls at the Right



ing Relation of Units



Cooling Beds and Convenient Way in Which Railroad Cars Are Available for Loading

tion and pinion set. All bars are passed through the looping and finishing stands by repeaters. Cutler-Hammer control is used for all of the mill motors.

The finished product is delivered from the finishing stand to the hot runout tables of a double Griffith type mechanical hot bed, 250 ft. in length by 24 ft. ½ in. center to center of the cold runout tables.

The hot bed is separated from the finishing stand by about 50 ft. and the material is delivered to either side by means of hot runout troughs and an air-operated switch which is pivoted at the finishing stand. The hot runout tables, located in the center of the double hot bed, are driven by an endless cable, the head sheave being driven by an adjustable speed motor. This motor drive is also belted to a set of hot runout pinch rolls, which are used only to aid in delivering light and short bars from the finishing stand to the hot bed.

The bars are delivered alternately to each side of the hot bed at a speed slightly faster than the delivery speed of the finishing mill to prevent buckling of the bars. As the bars reach the desired position they are lifted from the hot runout table and deposited on stationary grate bars by scalloped lifting bars extending across the hot bed. The lifting bars are mounted on a structural frame with the side toward the hot runout table, supported on a continuous-motor-driven eccentric shaft extending through the entire length of the hot bed. The opposite side of the frame is suspended by hangers under the cold runout table. Each rotary movement of the lifting bars operating between the stationary bars advances the cooling material 4¾ in. toward the cold runout table.

The cooled bars pass from the end of the lifting bars upon shuffle bars extending over the cold runout table. The ends of the shuffle bars toward the lifting bars are also supported on a continuous motor-driven eccentric shaft extending through the entire length of the hot bed, the opposite ends are supported by small rollers on levers mounted on a continuous rocker shaft. The rocker shaft is operated by an air cylinder located underneath and at the center of the hot bed. The movement of the rocker shaft drops one end of the shuffle bars and deposits the cooled rods on the motor-driven cold runout tables which deliver to the cold bar shears. The hot bed has a capacity of 38 rows of bars, 19 on each side.

The motors for driving the shuffle bars and cold runout tables are located at floor level between the hot bed and the cold bar shears and connected to their respective shafts by spur gear sets, while the motors for driving the lifting bars are located underneath and at the middle of the hot bed and drive through spur gear reduction sets.

An air-operated test piece shear is located on a trolley over the hot bed at the mill end and can be operated on material from either side of the hot bed.

The cold finishing equipment consists of two units leading off from each side of the hot bed. Each unit consists of one vertical stop shear and back shear

Loading Tracks, Assembling Beds, Cradles and Shears, with the Cooling Beds in the Background and Looking Toward the Rolling Mills

table with hand-operated gages and platform scales.

The sheared bars are pulled off the shear table by hand into cradles mounted on platform scales for weighing. The scales are of the suspension platform mill type, consisting of four platforms, each platform being 4 ft. wide and 36 ft. long. A pair of platforms is placed on the side of each back shear table and each pair of scales is equipped with devices for connecting the two scale beams so that they can be used as one weighing unit when handling long bars.

The bars are removed from the cradles by the 15-ton shipping crane and placed either in storage racks or in cars for shipment. An auxiliary shear with skid bed and roller table is located in rear end of the building for the purpose of shearing special short lengths of bars.

NOVEL BONUS PLAN

Pittsburgh Company Will Try an Experiment in Group Effort

The United Engineering & Foundry Co., Pittsburgh, has adopted a new bonus system for shopmen on piece work and hourly rates. This bonus plan is divided into three parts—attendance bonus, service bonus and vacation bonus. An amount equal to 5 per cent of the wages earned each month by each employee is set aside for payment to the employee at the end of the bonus period, provided he has fulfilled the required conditions of regularity and punctuality. The vacation bonus includes a number of days vacation each year. The service bonus provides for the setting aside each month of a percentage of the wages earned by each employee for payment at the end of the bonus period.

F. C. Biggert, Jr., president of the company, explains the new system as follows:

For a number of years this company has paid to selected employees a 10 per cent bonus for faithful and continuous service. The principal condition necessary to obtain this bonus has been that the employee sign a contract agreeing not to leave the employ of the company during the bonus period, or, rather, agreeing that the company was not liable for the bonus in case he did leave. This bonus has not been entirely satisfactory for several reasons.

From the employee's standpoint, the signing of a contract has sometimes been objectionable. The company feels that the contract did not sufficiently stress the need of the employee doing something to earn the bonus. A new bonus system has, therefore, been worked out. This bonus will be paid to all employees in the shops who work on a piece-work or hourly basis.

The new bonus is based upon the assumption that the increased efficiency of operation it will procure will more than offset the cost and, therefore, will decrease the cost of the company's product. If this assumption does not prove out the bonus will be of no value to the company. If it should so far fail as to increase the cost of our product it will prevent our getting work, and will, therefore, be valueless to both employee and company.

The consumer will decide upon our efficiency as a company, but to measure the efficiency of each individual is a very difficult matter in our kind of business. To overcome this difficulty we have decided to base the new bonus upon two conditions which, we believe, are fairly accurate measures of personal efficiency.

First—Regularity and punctuality of attendance.

Second—Length of service.

A man who is always on time and always on the job may certainly be credited with an interest in his work. So the first condition will indicate the willingness and earnestness of an employee.

It is reasonable to suppose that a man who has been long in the employ of the same company has proven his ability, else he would not have been kept. So the second condition will indicate the ability of the employee.

The two conditions will, therefore, give a pretty good measure of an employee's efficiency, for if he is willing and earnest and has ability he must be efficient.

The new bonus will, therefore, be divided into two main parts, one for attendance and one for length of service.

But no person can be continually on the job year after year and keep up his efficiency. He must occasionally have a rest and some time to get away from the routine of work. To meet this requirement the second part of the bonus—that applying to length of service—will be divided into two parts: First, a percentage of wages earned, and second, a certain number of days' vacation on pay, both increasing with length of service, according to established schedules.

The bonus periods will be six months each, beginning with the first day of the month on which each employee begins work.

The attendance bonus will only be set aside for employees when they are on hand and on time every day during the month, except that six days will be allowed in each year to cover absence or lateness. Provision will be made to prevent loss of attendance bonus when an employee is injured in the course of his work. When it is necessary to lay off for lack of work the past length of service will be credited to employees for service and vacation bonus when they return.

Vacation bonus money will not be paid unless and until the vacation is actually taken. The idea back of this rule is that the attendance and service bonuses will tend to prevent a man taking an occasional day off, and as a result he will need to take his vacation when due.

The officers of our company and the department managers have studied and worked over this bonus system for the past two months in an effort to make it as fair and liberal as possible, but it is probable that with all this care there may still be differences of opinion in applying it to individual cases. This will be provided for by forming in each plant a committee of two bonus men and a representative of the company to settle disputes in connection with the administration of the bonus.

In the preceding you have a summary of the new bonus system. It is an experiment. In some respects it is entirely new. Bonuses have been paid for steady attendance and punctuality. In some few cases they have been paid for length of service. So far as we know no paid vacation bonus has ever been tried, and it is quite certain that the three bonuses in combination have not been tried.

This bonus system is an experiment in economics—to see whether it is possible, by paying higher wages, to get enough product to justify these wages. It must be very well understood that there is no charity in the scheme. It is a business proposition. Neither this company nor any other can afford to pay more than the going wage unless the increase in efficiency is such as to reduce the price of the company's product.

Again, this bonus system is an experiment in group effort as against individual effort. If the desired result is to be had it must be by each employee doing his best and insisting that his fellow worker do likewise. This is not meddling in another man's affairs, but looking out for your own, for unless the shirker is culled out or converted to a worker the whole system must fail. And further, it is looking out for the other fellow more than for yourself, for the shirker does himself more harm than he does you.

The foundation of the whole bonus may be stated as efficiency, obtained by group effort. Our business does not lend itself to piece-work and minute division of operations as in the case, for instance, of automobile production. We can only use these methods of measuring personal efficiency in a very limited way. We must, therefore, depend largely upon the spirit of cooperation to get results. And when we get results it is the policy of this company to pay for them.

The Chicago, Wilmington & Franklin Coal Co., West Frankfort, Ill., has placed the contract for its Orient No. 2 mine for what is claimed will be the largest coal mining hoist in the world with the Westinghouse Electric & Mfg. Co. and the Nordberg Mfg. Co., the former to furnish the electrical equipment. The hoist is further said to be twice as large as any coal mining hoist in North America, the largest coal mine hoist in North America at present being equipped with a hoist motor of 1400 hp. The motors for the new hoist will be rated at 4400 hp. divided between two motors of 2220 hp. each, one mounted at each end of the drum shaft.

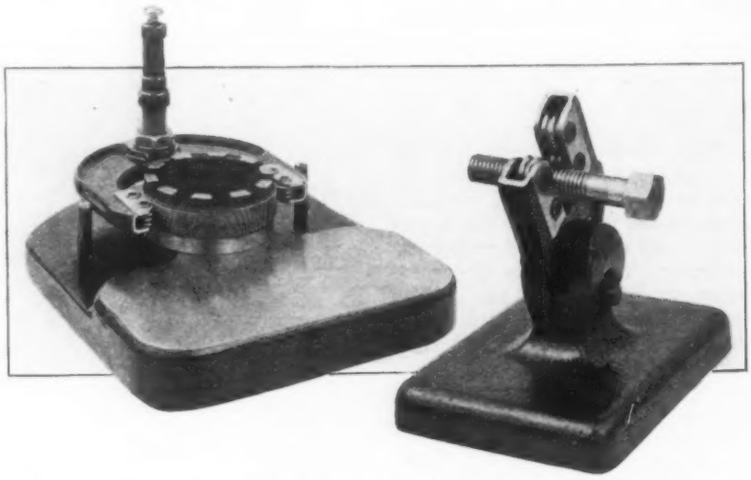
A report to the Department of Commerce says the average Austrian metal wage index for June, July and August, is 13,825, as compared with 11,817 for December, 1922 (based on July 1, 1914).

Devices to Facilitate Thread Gaging

A gage vise and gaging fixture for use in conjunction with its adjustable thread snap gages have been placed on the market by the John-Sons Gage Works, Hartford, Conn.

The gage vise is primarily for use in the inspection room, and may be used with any style or size of the company's adjustable thread snap gages. It is rigidly constructed and clamping is by means of a collar head screw. The illustration shows the vise with a ½-13 U. S. S. style A gage in position, and a cap screw engaged.

The gage fixture, shown in the left-hand illustration, is intended for use in the gaging of casing or shell threads, such as lock nuts, adjusting nuts, sleeves, bearing retainers and similar parts. It may be used in conjunction with any style of the company's adjustable thread snap gages for work larger than 2 in. in diameter.



The Gage Fixture at the Left Is for Gaging of Casing or Shell Threads. The gage vise, at the right, is for use in the inspection room. Both are used in conjunction with adjustable thread snap gages

The finished portion of the base on which work the slides is a hardened steel plate, ground after being fastened in position on the casting. By means of springs in the stem, the gage is free to float in a perpendicular plane. The position of the gage is regulated by the adjusting bolt which projects through a hole in the handle. The stem projects through the threaded bushing and handle, and guides the gage so that at all times it is parallel to the working surface of the base. This arrangement, it is said, eliminates the tendency of cross threading which develops in the use of ring gage, caliper gage, and thread micrometer. Its freedom to float in a perpendicular plane permits the necessary alinement between the gaging rolls and the threads on the piece being gaged.

By gaging the work again after it has been given a quarter turn, an out-of-round thread is readily detected. By grasping the handle and elevating and depressing the gage, a tapered thread can also be detected. After the handle is released the gage will return to its original position.

It is claimed that under actual working tests this gage fixture has proved its practicability in all respects, and has advantages in speed and durability in the gaging of the type of work for which it was designed.

Commission Asked to Reopen Assigned Car Case

WASHINGTON, July 17.—The Interstate Commerce Commission has been petitioned by all of the class one railroads of the country to reopen the assigned car case. In that decision the commission refused the railroads the right to furnish special coal car service at bituminous mines. Estimate was made in the petition that the decision, if made effective on Sept. 1 as proposed, would cost the railroads $100,000,000 in the increased price of coal. Request was made if the commission does not reopen the case as an alternative it should modify the order.

The members of the Electric Hoist Manufacturers' Association report an increase of 3.208 per cent as compared with the previous month in the number of hoists ordered during June, and a decrease of 2.146 per cent in the value of hoists ordered. Shipments of hoists decreased 6.46 per cent as compared with last month.

Vacations with Pay Recommended

Vacations for office workers, with pay, are becoming recognized as investments in future productiveness, according to a survey of the vacation policies of many of the country's leading industries, recently completed by the American Management Association, 20 Vesey Street, New York.

The report shows a general policy to grant two weeks with full pay to office employees employed at least a year, and one week with pay where the period of service has been less than a year. Some industries give a worker who has been on the job less than a year, one day of vacation for each month of service. That there is a tendency to extend the period in which vacations may be taken over a greater part of the year than has been the case, is also brought out.

"Experience proves that pay with vacations is necessary," says the report, "if the employee is to receive the full benefit from his holiday. The employee is thus enabled to take a profitable vacation and returns with increased stamina and renewed vigor, and more than repays the small cost incurred by the employer." In recognition of the importance of giving office workers time for rest and recreation, some industries have established vacation bureaus which give a veritable travel service to employees. Supporting the work of these bureaus company savings plans are operated to assist employees to secure the funds for the trips they contemplate.

Summed up the survey indicates that vacations with pay improve production, increase employee morale, make possible the training of employees for jobs higher up, disabuse an employee of any idea he may have as to his indispensability to the business and permit checking up on the personnel of an organization to determine its character and ability.

Tests of Parts of the New Delaware River Bridge

As mentioned some time ago, the Bureau of Standards is conducting a cooperative investigation with the Joint Commission of Pennsylvania and New Jersey on the strength of certain members of the new bridge across the Delaware River between Philadelphia and Camden. The general problem in hand is the compressive strength of web plates; and it has been found, as might be expected, that the strengths are a function of the properties of the material. A special study is now under way on the relation between the properties and certain metallurgical phenomena which have been developed during the investigation.

Magnetic Testing of Wire Rope

In Bulletin No. 74 brief mention was made of the work which the Bureau of Standards has undertaken on the development of a non-destructive method for testing wire rope. In connection with the investigation, a conference was held on June 16 at which the various interests concerned were represented. It was the sense of the conference that magnetic methods of testing appeared to be most promising and that a large part of the investigation should be directed along that line, although various other methods which may show possibilities should not be overlooked.

Accounting for Foundry Overhead Expense

Allocation of General Expenses, Both of Those as a Factory and of Those of the Foundry Proper

BY F. C. EVERITT AND JOHNSON HEYWOOD*

THE expense of the tool and maintenance department of the foundry is made up the same as for the others, but includes also the share of the distributed expense from "Steam" and "Power and Light." The total chargeable labor is shown separately although it is considered as expense, or non-productive labor, when making up the factory payroll. It includes the mechanics, electricians, blacksmith, etc.

This department takes care of the general maintenance and repairs, new construction and making of new equipment for the entire plant. It is obvious that it will have maintenance and repair work to do for itself as well as for other departments, the labor and material for which must be considered as a part of the department's expense. This labor is shown as non-chargeable labor. The miscellaneous labor item includes any idle time of the mechanics, when they are not doing chargeable work, together with any general help which the department may require. The repair materials are shown as maintenance materials.

When maintenance labor is required for repairs to the equipment in the steam department, and to power and light, it is transferred direct to these departments and not included with the labor totals of the tool and maintenance departments.

The actual labor accounting will therefore be as follows:

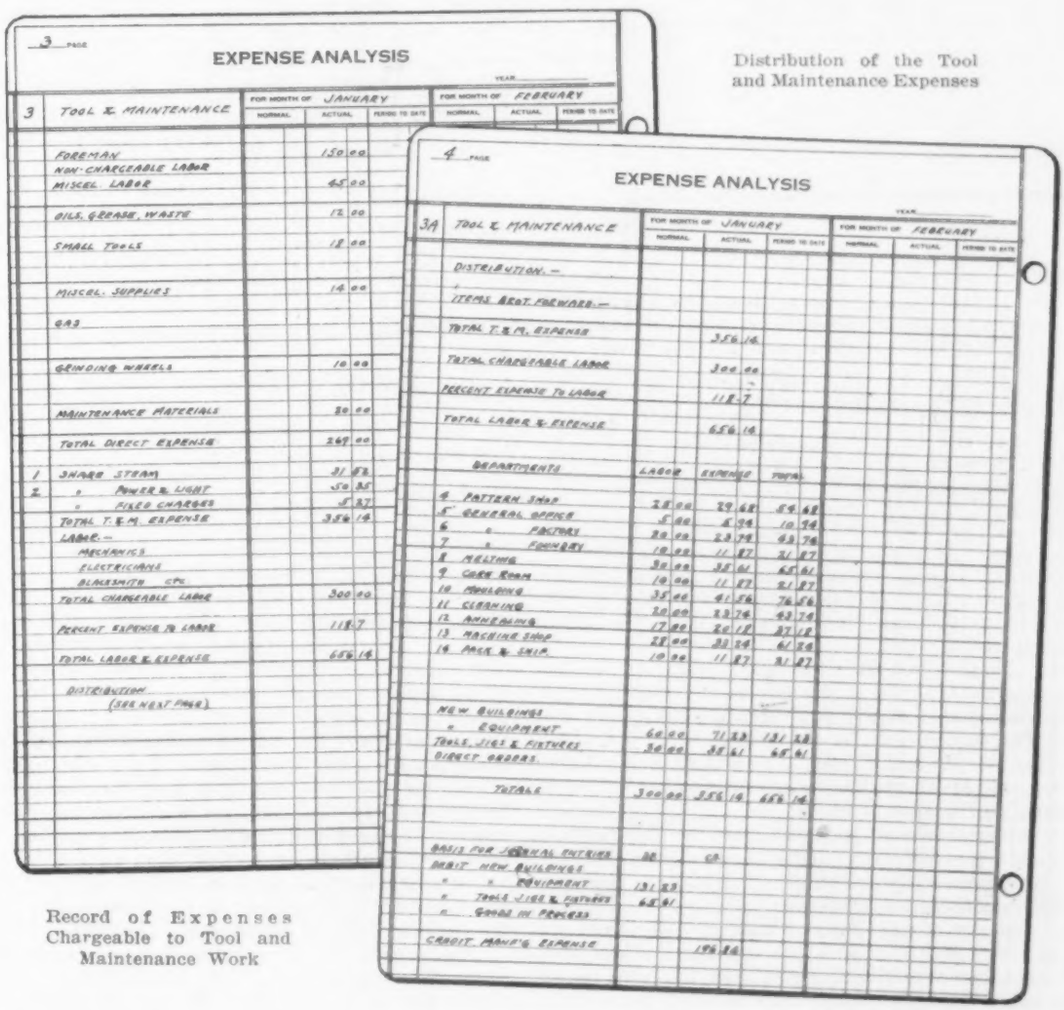
(a) Charged to department No. 1	$4
(b) Charged to department No. 2	31
(c) Non-chargeable labor (including foreman)	195
(d) Chargeable labor	300
Total department labor	$530

Item (c) is considered a part of the department expense while item (d), the chargeable labor, becomes the direct labor which is used as a basis for distributing the departmental expense.

The total expense as shown in the analysis is $356.14; chargeable labor $300; and expense to labor 118.7 per cent.

Forwarding these items, form 37-3a, we find another item, "total labor and expense," amounting to $656.14.

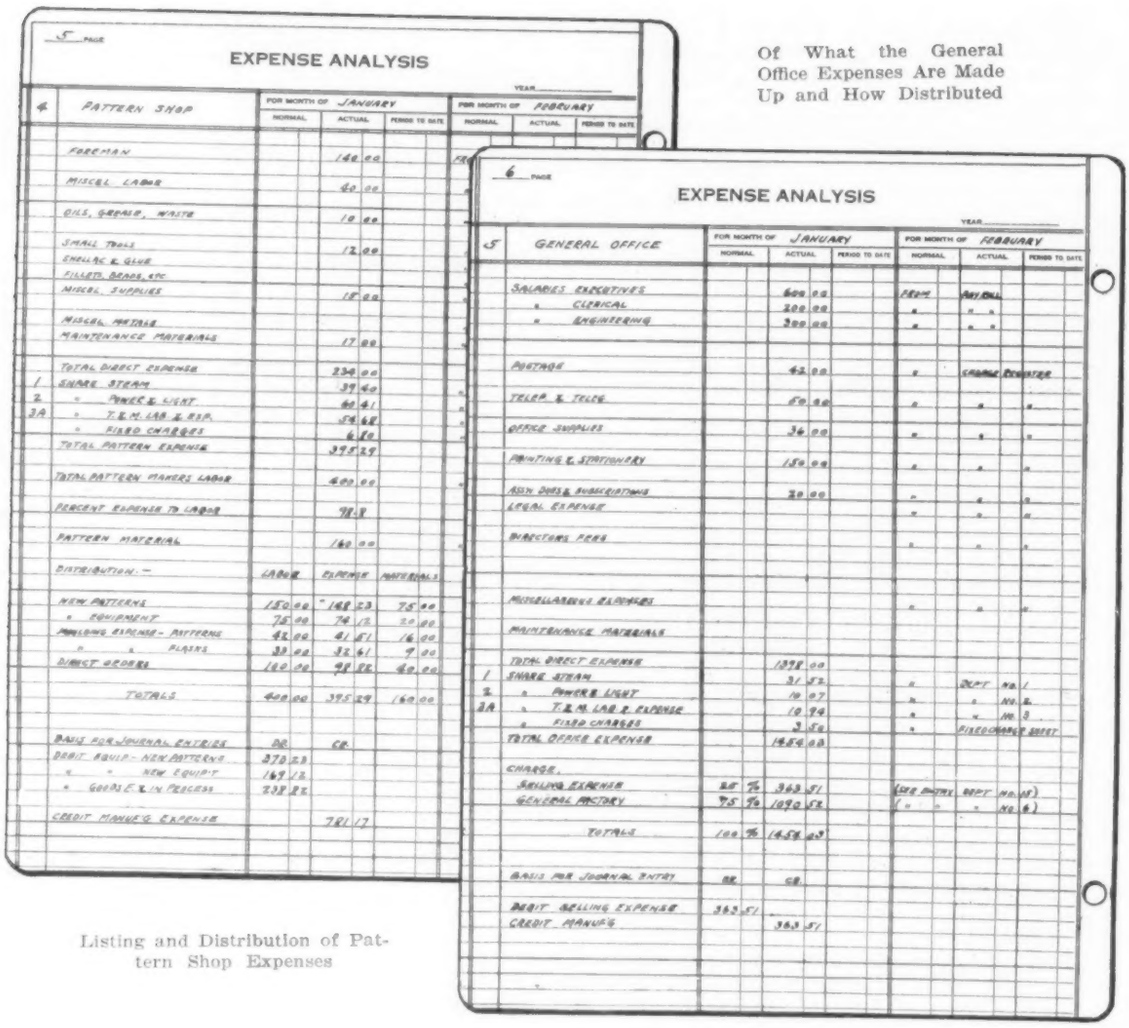
The amount of the labor chargeable to the other departments is determined from an analysis of the time cards as shown on form 37-3a. Just below the



Distribution of the Tool and Maintenance Expenses

Record of Expenses Chargeable to Tool and Maintenance Work

*Of Miller, Franklin, Basset & Co., Inc., New York. In the issue of April 26 was given the procedure for material cost accounting, on June 14 that for labor cost accounting, and on July 12 the first part of the discussion of overhead accounting.



5 PAGE

EXPENSE ANALYSIS

YEAR

	4 PATTERN SHOP	FOR MONTH OF JANUARY NORMAL	ACTUAL	PERIOD TO DATE	FOR MONTH OF FEBRUARY NORMAL	ACTUAL	PERIOD TO DATE
	FOREMAN		140 00				
	MISCEL LABOR		40 00				
	OILS, GREASE, WASTE		10 00				
	SMALL TOOLS		12 00				
	SHELLAC & GLUE						
	FILLETS, BEADS, ETC						
	MISCEL SUPPLIES		18 00				
	MISCEL METALS						
	MAINTENANCE MATERIALS		17 00				
	TOTAL DIRECT EXPENSE		237 00				
1	SHARE STEAM		39 40				
2	" POWER & LIGHT		60 41				
3A	" T & M. LAB & EXP.		54 68				
	" FIXED CHARGES		6 20				
	TOTAL PATTERN EXPENSE		395 29				
	TOTAL PATTERN MAKERS LABOR		400 00				
	PERCENT EXPENSE TO LABOR		98.8				
	PATTERN MATERIAL		160 00				
	DISTRIBUTION:—	LABOR	EXPENSE	MATERIALS			
	NEW PATTERNS	150 00	148 23	75 00			
	" EQUIPMENT	75 00	74 12	20 00			
	MOLDING EXPENSE - PATTERNS	42 00	41 61	16 00			
	" " FLASKS	33 00	32 61	9 00			
	DIRECT ORDERS	100 00	98 72	40 00			
	TOTALS	400 00	395 29	160 00			
	BASIS FOR JOURNAL ENTRIES	DR	CR				
	DEBIT EQUIP - NEW PATTERNS	370 23					
	" " NEW EQUIPT	169 12					
	" GOODS IN PROCESS	238 82					
	CREDIT MANUF'G EXPENSE		781 17				

6 PAGE

EXPENSE ANALYSIS

YEAR

	5 GENERAL OFFICE	FOR MONTH OF JANUARY NORMAL	ACTUAL	PERIOD TO DATE	FOR MONTH OF FEBRUARY NORMAL	ACTUAL	PERIOD TO DATE
	SALARIES EXECUTIVES		600 00		FROM PAYROLL		
	" CLERICAL		200 00		" " "		
	" ENGINEERING		300 00		" " "		
	POSTAGE		42 00		"	CHARGE REGISTER	
	TELEP & TELEG		60 00		"	"	"
	OFFICE SUPPLIES		34 00		"	"	"
	PRINTING & STATIONERY		150 00		"	"	"
	ASSN DUES & SUBSCRIPTIONS		20 00		"	"	"
	LEGAL EXPENSE				"	"	"
	DIRECTORS FEES				"	"	"
	MISCELLANEOUS EXPENSES				"	"	"
	MAINTENANCE MATERIALS						
	TOTAL DIRECT EXPENSE		1378 00				
1	SHARE STEAM		31 53		"	DEPT NO. 1	
2	" POWER & LIGHT		10 07		"	" NO. 2	
3A	" T & M. LAB & EXPENSE		10 74		"	" NO. 3	
	" FIXED CHARGES		3 56		"	FIXED CHARGE SHEET	
	TOTAL OFFICE EXPENSE		1484 00				
	CHARGE						
	SELLING EXPENSE	25 %	363 51		(ORDERS ENTRY	DEPT NO. 4)	
	GENERAL FACTORY	75 %	1090 52		(" " "	NO. 6)	
	TOTALS	100 %	1454 03				
	BASIS FOR JOURNAL ENTRY	DR	CR				
	DEBIT SELLING EXPENSE	363 51					
	CREDIT MANUF'G		363 51				

Of What the General Office Expenses Are Made Up and How Distributed

Listing and Distribution of Pattern Shop Expenses

list of departments on this sheet are charges to new equipment which covers the labor used on work chargeable to the asset accounts. Such charges do not belong in the expense of doing business because this labor and material has increased the value of equipment needed for production and becomes a part of the investment. Obvious as this is, many concerns make the serious mistake of charging these items to expense.

With the items of chargeable labor posted against the department, the proportion of tool and maintenance expense is determined and checked with the total chargeable labor and expense of the department, $656.14. These totals are then distributed by posting to the expense analysis of the succeeding departments opposite the item tool and maintenance labor and expense. The amounts to be charged to asset accounts, "New Equipment" and "Tools, Jigs and Fixtures," are then journalized as credits to manufacturing expense and debits to the asset accounts.

The material which has been used in the various departments for maintenance has been charged direct from the expense requisitions, and is shown opposite the item "maintenance materials."

The expense of the pattern shop is distributed in much the same way as that of the tool and maintenance department, but here the material used has been listed instead of charged direct to the general ledger accounts. Either method will serve reasonably well for both departments. It is advisable, however, to adopt but one method for the sake of uniformity.

To distribute the labor, it must be analyzed from the time cards, as follows:

New patterns	$150
New buildings	75
Molding expense:	
Patterns	42
Flasks	33
Direct orders	100
	$400

To these items are added—as shown on the distribution part of the expense analysis—the proportion of the department's expense and the material. Molding expense covers the cost of repairs and upkeep of working patterns, core boxes and flasks, and so is chargeable to the molding department.

The expense of the general office department is gathered as shown on form 37-5. Since the general office serves both selling and manufacturing, some way must be found to allocate the expense equitably between the two activities. Whenever possible, office expenses should be charged direct to whichever side of the business is benefitted by them, but in small foundries, where a single person divides his time, it is necessary to prorate the expense based upon a study of just how the time and effort is put in. In this case let us assume that 75 per cent of the activities of the general office are for the benefit of manufacturing and 25 per cent for selling. As a result, the $363.51 is credited to manufacturing expense, and debited to selling expense. This amount is then posted to the expense analysis of the selling department and the balance, $1,090.52, is posted to the expense analysis of the general factory department, form 37-6.

The expense of the general factory department includes those items which only apply to the factory as a whole, and which cannot be charged directly to any other department. General supervision, with its assistance, as well as general store-room help, watchmen and janitors, yard labor and miscellaneous help is obviously an expense which benefits all other departments.

Allocation of Trucking Expense

Since the trucking expense serves both shipping and manufacturing, there is a difference of opinion as to how the charge should be handled. The trucking expense involves the cost of trucking from the packing department to the freight terminals, from receiving

plants to the general stores for raw materials, supplies, equipment and returned goods, and the general trucking for miscellaneous plant service. To attempt to divide this expense on the basis of the actual activity would require excessive clerical detail, and, since its accuracy depends upon the accuracy of the reports turned in by more or less illiterate truckmen, it is doubtful if the extra effort is worth while. Therefore greater simplicity and at least equal accuracy is obtained by charging the expense to general factory and making the distribution proportionately to production. Where the organization is large and the trucking can be definitely analyzed, to divide the expense becomes a simple matter. Here again the conditions in the individual foundry must govern.

In this particular instance, the entire trucking expense has been included in the general factory department.

In addition to the usual list of miscellaneous supplies, there are the new items of water, rent, demurrage, miscellaneous freight and express, freight on returned goods, etc. If there is a separate meter for boiler use, the charge for its water is made direct to the steam department. Otherwise, the entire expense for water had best be charged to general factory department.

Freight and express charges should go into the cost of materials and supplies, but in every factory there are a number of these charges which are difficult to charge direct and can best be handled by charging them to the general factory department.

Accounting for Returned Castings

Since goods returned must be debited to sales and credited to the cost of goods sold, so as to get them back into the goods in process inventory at cost, the freight or express charges involved become items of expense of the general factory department. If, however, the goods are returned because defective and they must be scrapped, there is an element of expense involved which must be carried into the cost.

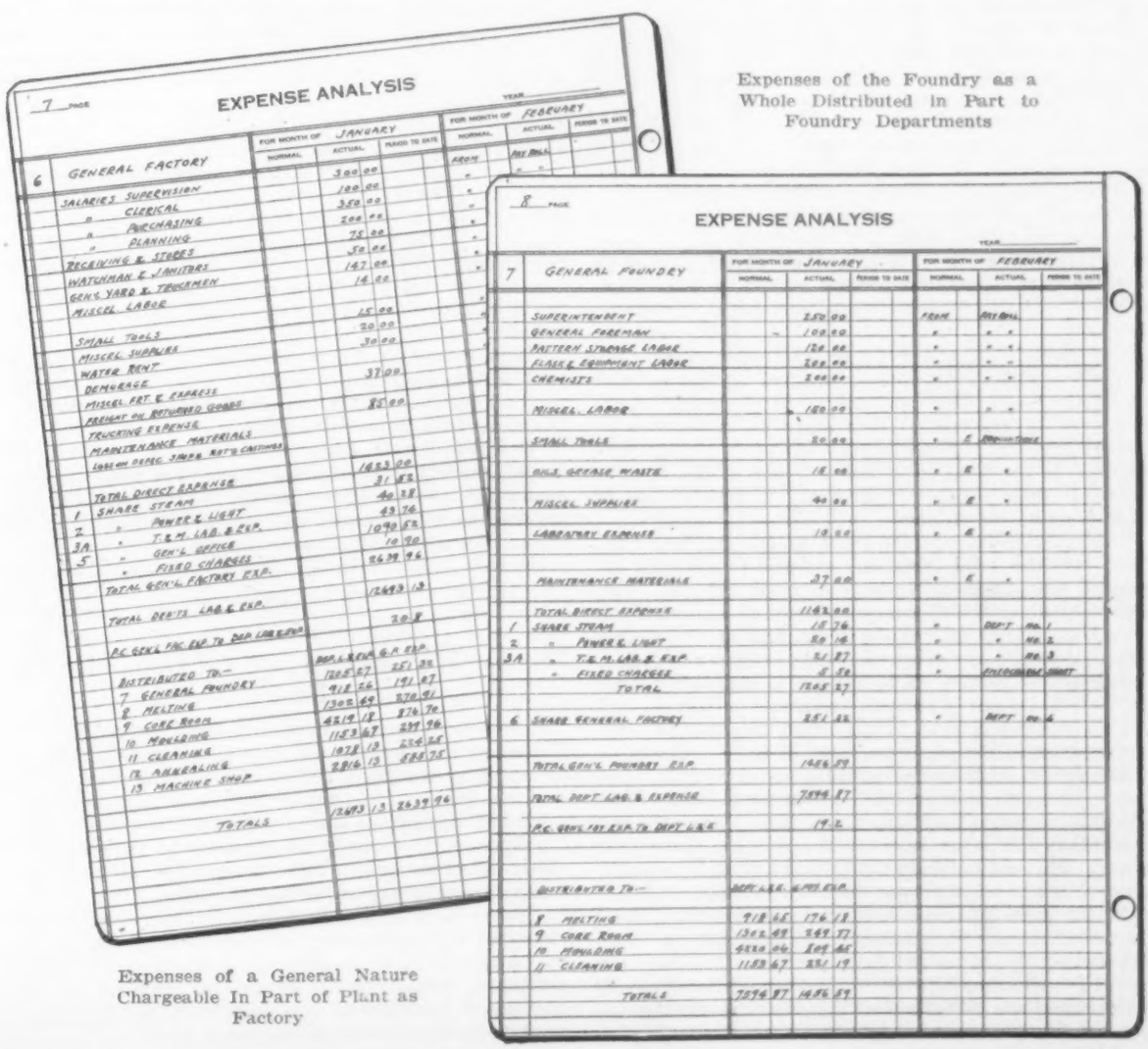
If the original sales price was		$500 and
the cost of sales was		400 with the
cost composed of		
Metal	$150	
Labor	150	
Expense	100	
		$400
and the scrap value		75

The accounting would be as follows:

		Dr.	Cr.
Sales		$500	
Accounts receivable			$500
Goods finished and in process		400	
Cost of goods sold			400
Pig and scrap account		75	
Manufacturing expense:			
Loss on defective returns:			
Labor	150		
Metal	$75		
Expense	100		
	325		
Goods finished and in process			400
		$1,300	$1,300

The entire loss involved in the transaction is a business expense and must be included in the cost of manufacturing. The loss in this instance amounts to $325.

For shop scrap returned to the foundry a similar accounting is necessary. The $500 worth of castings, at cost, may be broken and returned for remelting. This amount accordingly becomes a credit to the goods finished and in process account, assuming of course that $500 is the value of the castings, at cost, at the point in the process of manufacturing where the breakage occurred. Scrap value becomes the only salvage, and the difference, which becomes a loss, must be included in the cost, charging it to manufacturing ex-



Expenses of the Foundry as a Whole Distributed in Part to Foundry Departments

Expenses of a General Nature Chargeable In Part of Plant as Factory

pense. Hence the item in the analysis, "Loss on defective shop and returned castings."

Distributing General Expense to Productive Departments

There are four possible ways in which to distribute the general factory expense to the productive departments. They are: First, on the productive labor dollar; second, on the total department payroll; third, on the total department labor and expense; and fourth, on the productive labor hour.

The productive labor dollar is probably most generally in use because of its simplicity, and is based on the principle that the general factory expenses are incurred for the benefit of and hence in proportion to the amount of direct labor used in each department.

Under this method the total of the direct labor in each department is listed for the month. The amount of this expense is divided by the total direct labor to give the percentage of the general factory expense to the total direct labor. This percentage is then applied to the direct labor of each department to obtain the amount of the general factory expense chargeable to each department.

If there is a wide variation in the character of the work, or a marked difference in the rates of pay of different departments, this method may result in charging too much of the expense to one department and not enough to another. Again, if a department increases the rate of pay without increasing the number of employees or its production, while the payrolls of the other departments remain fairly constant, this department will improperly absorb a greater amount of the general factory expense, thus raising the unit cost in the department. In applying this method, attention should be given to the balance of conditions with reference to production, equipment and methods of pay, if accurate results are to be secured.

The total department payroll basis is more representaive of the total number of employees and their combined earnings, but it contains to a considerable extent the same element of error as the first. The same caution should be exercised in applying it. The results will be somewhat different from the result of the first method. It does not take into consideration other operating conditions over which the general factory department has supervision, yet is an improvement over the first method when conditions of work and rates of pay vary. The method of calculation is the same as with the first method except that the total payroll of the department is used instead of the direct labor only.

The total labor and expense basis recognizes that the general factory expense is entailed by the general supervision which this department exerts over all operating expense and labor. It is therefore reasonable to consider that the expense of supervision is closely proportioned to the total labor and expense of the departments. A great degree of accuracy in distribution is possible with this method.

The calculations are the same as for the first two, except that the total labor and expense is collected instead of the direct labor or the total payroll. The element of error which was mentioned in applying the preceding methods still exists in the application of this method, but with the total operating expenses included, a much better balance of conditions is secured and the effect of this error is greatly reduced.

This method is used to distribute the general factory expense in the analysis, form 37-6.

The fourth method has advantages in certain foundries. The principle of the productive labor hour method is the same as of the direct labor dollar method except that the labor is measured in time instead of dollars. This means that the general factory expense is considered to be in proportion to the number of hours put in, in each department, by the direct labor operators rather than to their earnings. The additional work of collecting the hours per producer is not an excessive clerical job and may be well worth the additional effort.

To substitute this method for the one illustrated, the only change needed is to add an item in each productive department, showing the "productive man hours." It would mean no additional work in the expense analysis.

No one of the four methods of distributing the general factory expense can be recommended as best for all foundries. There is one best method for any foundry which it is the duty of the cost engineer to decide. Bear in mind in making such distribution that absolute accuracy in manufacturing costs is not a possibility; but practical accuracy is attainable. The effort must be to get the highest degree of refinement which conditions permit.

Expenses of General Foundry

The last of the contributory departments is the general foundry department, the expense analysis of which is form 37-7.

In the foundry proper there are the melting, core room, molding and cleaning departments, each of which may have its foreman, miscellaneous labor, etc., which are direct charges to their respective departments. There are also the general superintendent, general foreman, pattern storage help, flask and equipment help, chemist and general labor for the whole foundry and a few expense items as well as the shares of steam, power and light, tool and maintenance, labor and expense, and fixed charges, all of which go to make up the general foundry expense. This means that none of these items are chargeable direct to any one of the productive departments but must be collected and distributed in exactly the same way and on the same basis as the general factory department expense.

The method of handling the expense of the chemists and the laboratory will depend upon the individual foundry. If the chemist is employed and the laboratory maintained strictly for foundry use, the charge should be made to the general foundry department as shown, but if the laboratory serves other departments of the plant, the expense should be placed where it will be given a more general distribution, preferably in the general factory department. If an outside laboratory is employed the amount will invariably be charged to the general foundry, except when an analysis may be needed for some other department, in which case it would be charged to that department.

The expense analysis of the general foundry department provides control over the foundry supervision, with its associated expenses, by way of comparison and its ratio to the operating expenses of the productive departments. The ratio shown is 19.2 per cent. An increase in this percentage suggests an investigation for the purpose of bringing about the needed economies.

If increased efficiency in the management of the department is striven for, a decrease in this percentage will tell to what extent the effort has been effective as measured in dollars and cents.

It is the use of costs in this manner which makes manufacturing costs of most value. The analysis must be studied constantly, for therein lies the means of controlling the conditions of your foundry and consequently a basis for more satisfactory returns.

(To be continued)

The Form of Oxygen in Steel Determined by Vacuum Fusion Analysis

Previous tests have indicated that oxygen existing in iron or steel as iron oxide or silica is completely determined by the vacuum fusion method of analysis for gases in metals. Additional tests have been made with oxides of manganese and aluminum, the results showing a recovery of over 90 per cent of the oxygen in either of these oxides, the oxides used in such tests being in comparatively coarse particles.

It has been shown, both in these tests and by previous investigators, that the reduction of such oxides by carbon is more complete the finer the oxide. It is, therefore, believed that such oxides contained in steels as very fine inclusions are completely reduced in the vacuum fusion method of anlysis.

Captain Robert W. Hunt's Sixty-five Years in Engineering

Robert Woolston Hunt, president Robert W. Hunt Co., Chicago, an outstanding figure in the development of the technique of the steel industry, died in Chicago, July 11 at the age of 84. He was born Dec. 9, 1838, in Fallsington, Bucks County, Pa. He spent several years learning the practical side of iron making in the rolling mills of John Burnish & Co., Pottsville, Pa., and later took a course in analytical chemistry in the laboratory of Booth, Garrett & Blair, upon the completion of which he entered the employ of the Cambria Iron Co., Johnstown, Pa. On Aug. 1, 1860, he established at the Cambria works the first laboratory in the United States as a direct part of an iron or steel organization.

ROBERT W. HUNT
Dec. 9, 1838—July 11, 1923

In the fall of 1861 he entered the United States military service and was in command of Camp Curtin at Harrisburg, Pa., with the rank of captain. Upon being mustered out of service after the Civil War he returned to the employ of the Cambria Iron Co. and was sent to the works at Wyandotte, Mich., where experiments with the new Bessemer process of making steel were being conducted. He was placed in charge of the experimental works in July, 1865, and so continued until May, 1866, when the Cambria company called him back to Johnstown to take charge of its steel business. It was at this mill later, and largely under Captain Hunt's direction, that the first commercial order for steel rails ever made in America was rolled.

Later he assisted in designing and building the Bessemer works at the Cambria plant, and in 1873 moved to Troy, N. Y., becoming superintendent of the Bessemer works of John A. Griswold & Co., and in 1875 he became general superintendent of the Albany & Rensselaer Iron & Steel Co. During those years of active connection with steel rail manufacture, he almost completely rebuilt the various works of this company, and also patented many details of iron and steel metallurgical processes and machinery, including, in conjunction with others, the first automatic rail mill tables. At Troy, in conjunction with the company's chemist, Dr. August Wendel, Captain Hunt pioneered in making by the Bessemer process a number of forms of steel then classed as special, including wagon axles, drop forgings of various kinds, scythes, rifles and musket barrels, springs, and even rock drills, the steels ranging in carbon content from less than 0.10 to 1 per cent.

Upon leaving Troy in 1888, he removed to Chicago and established the Bureau of Inspection, Tests and Consultation, now known as the Robert W. Hunt Co. For many years the Hunt bureau's activities have had a wide range in connection with steel for construction, particularly in railroad work. Captain Hunt had an important part in latter-day changes in steel rail specifications and was a constant advocate of methods in mill practice which were calculated to give a longer life to the rail under the more severe requirements of railroad service. He made many contributions to the society discussions of the subject.

Captain Hunt was twice president of the American Institute of Mining and Metallurgical Engineers; past president of the American Society of Mechanical Engineers; past president of the American Society for Testing Materials, and past president of the Western Society of Engineers. In 1919 he was made an honorary member of the testing society. He was a member of various other technical societies both in this country and Europe.

In 1912 he was awarded the John Fritz Medal (for his contributions to the early development of the Bessemer process) and in June of this year he was given the Washington award of the Western Society of Engineers on the recommendation of a commission representing that society and the four national engineering societies. This award was conferred "for his pioneer work in the development of the steel industry in the United States and for a life devoted to the advancement of the engineering profession." He was for many years a trustee of the Rensselaer Polytechnic Institute and in 1916 received from it the honorary degree of doctor of engineering. The day before his death he was made an honorary member of the American Society of Civil Engineers.

Captain Hunt was a man of many friends, and if the reason be sought one need say no more than that he showed himself friendly. Speaking at Chicago on June 18, when he received the Washington Award, he said, referring to his participation in the various industrial developments of the past 65 years:

> As you can undoubtedly appreciate, such a life has had many phases, some of them of a perplexing and ofttimes strenuous character, and indeed there have been times when the burden seemed too great to be successfully carried, and the perplexities beyond hope of solution; but if ever a man has lived who has been blest with the friendship of his fellowmen, it has been myself, and there has never been a time when I have not had some one with whom to consult, and to an extent share my perplexities, with the result that there has always been an assisting hand held out to me, and never in my long life have I experienced a moment when, for any reason, I could say I was without friends. Based upon such an experience, I can assure my younger friends that no man who tries to do his duty conscientiously need ever fear that he will not receive support, even though it may not come from the direction where one thinks he has a right to look for it.

It will be of interest to reproduce here Captain Hunt's own references to early efforts in the improvement of American steel works and rolling mill practice. Speaking in New York at the Engineering Societies Building on Dec. 5, 1912, in accepting the John Fitz Medal for that year, he said in part:

> "The Cambria works had the fortune to roll the first steel rails made in America on a commercial order, from ingots cast in the Pennsylvania Steel Co.'s plant at Steelton, Pa., the rail mill at Steelton not being completed and the Pennsylvania Railroad Co. being anxious to try some American-made Bessemer rails. I had charge of the rolling under the direction of George Fritz, the chief engineer and general superintendent of the Cambria works, and the event was made more notable by Mr. Fritz's experimentally demonstrating that the reduction of steel ingots into blooms by rolling was preferable to performing that work by hammering, as was then the universal practice. Hence the American blooming mill.
>
> "At Cambria we first perfected the practice of

tapping slag from the cupolas in which the iron for conversion was melted, and thereby made possible a much larger output of steel. Previously it had only been possible to keep a cupola in operation not exceeding 24 hours; the cinder tapping increased the run to three or four times as long a period. . . .

"Following a change in a large part of the ownership of the Troy works, among other alterations and additions we remodeled the rail mill, and I embraced the opportunity to put in automatic machinery for handling the steel while being rolled into rails. It had required 14 men; we reduced this number to four and lessened their physical labors. Max M. Suppes was the master mechanic of the works, and gave me valuable assistance, and we united in some of the patents protecting it. Following the successful working of the plant, Capt. William R. Jones, general superintendent of the Edgar Thomson works, attached automatic tables to that rail mill, under license from us, and as he added some new features which he protected by patents, he pooled his interests with Mr. Suppes' and mine, and together we subsequently granted licenses to a number of the principal rail mills. Naturally, the able gentlemen in charge of the different mills made improvements upon our plans as they adapted them to their several requirements. Other engineers have devised labor-saving automatic rail rolling machinery, but such is the history of the Hunt, Jones, Suppes tables.

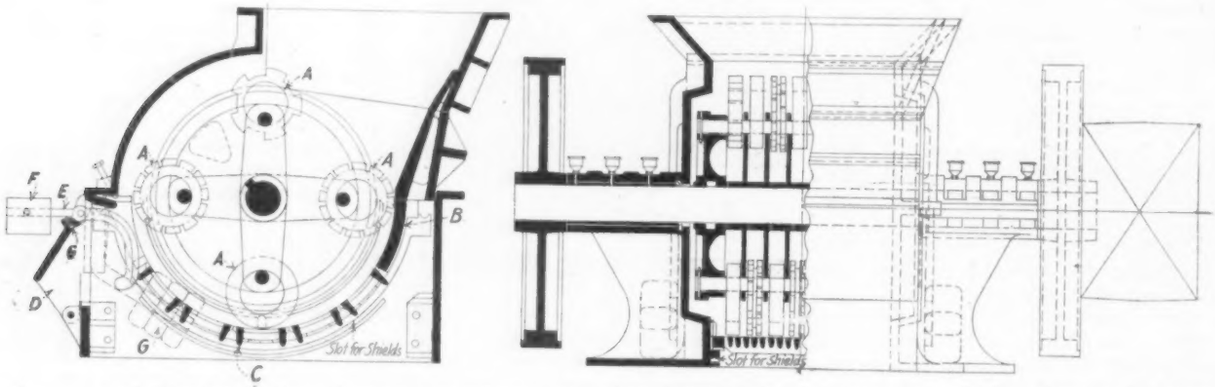
"While overcoming the many difficulties which we encountered in perfecting the Bessemer process and making it and its products successful both technically and financially, we demonstrated the value of numerous details, the importance of some of which seems later to have been lost sight of until now, in some instances, they are being rediscovered and hailed as heretofore unknown truths. However, if their importance shall thus again become recognized and beneficial results are obtained, good will have been accomplished; but perhaps seeking information from history might be a less costly way of finding facts."

CRUSHING STEEL TURNINGS

Machine Reduces "Stringy" Turnings to Short Shoveling Size—Economies Claimed

The economical preparation of steel turnings by crushing to the size designated as "shoveling turnings," thereby increasing their value, is claimed for the machine illustrated, which is being offered by the American Pulverizer Co., St. Louis.

The net increased value of the scrap has been put at about $3 to $4 per ton, and the operating cost from 15c. to 40c. per ton, which includes cost of power, labor and upkeep. Increased loading capacity of cars for the crushed turnings is emphasized as an advantage. The machine may be adjusted within limits to produce shoveling turnings of various sizes.



View of Steel Turning Crusher Showing Arrangement of Rolling Rings, Grinding Plate, Grate Bars, Finger and Apron Systems and Other Details. Close balancing of the fingers and apron is a salient feature

The rolling ring system employed in the company's coal, cement and other pulverizing machines is also a feature of the steel turning crusher. The crushing elements consist of four loosely suspended rolling rings, shown at *A*, *A*, *A*, *A*, in the line drawing herewith, these being attached to a spider, which is in turn keyed to the main shaft. Several of these spiders with their rings are mounted on the shaft, and revolve with it.

The advantage claimed for the ring crushing construction is that the rings being held in the operating or crushing position by centrifugal force only, they are free to move back 4 in. and thus clear obstructions. The obstruction may consist of material that one of the rings cannot crush, in which case the other rings continue the crushing action, finally breaking the obstruction if possible, or passing it out of the machine by the apron arrangement provided. When a ring has been thrown back out of its normal crushing position it is free to return into action in a direct axial line. The action of the ring is said to be that of striking, crushing and rolling.

Turnings fed into the hopper are drawn in by the rings and crushed against the grinding plate *B* and the grate bars *C*. The crushed turnings fall by gravity through the grate bars, *C*, at the bottom of the machine, as shown. In some installations they drop onto a belt or slat conveyor and are carried out to a chip wringer for removing the oil.

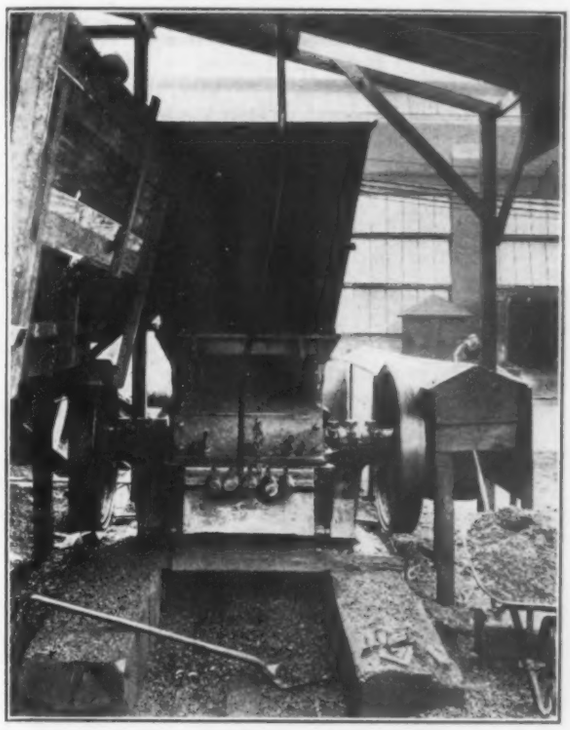
An important feature is the automatic apron and finger system, seen at *D* and *E* for removing large pieces of iron or other material which may be mixed with the turnings fed into the machine. This feature serves to relieve the machine of pieces which cannot be crushed small enough to pass through the grate bars. The fingers are attached and counterweighted as shown. A large piece coming between one of the rings and the fingers presses the finger outward, permitting the piece to drop through between the fingers and the end of the grate bars, the finger returning instantly to normal position by means of the counterweight *F*.

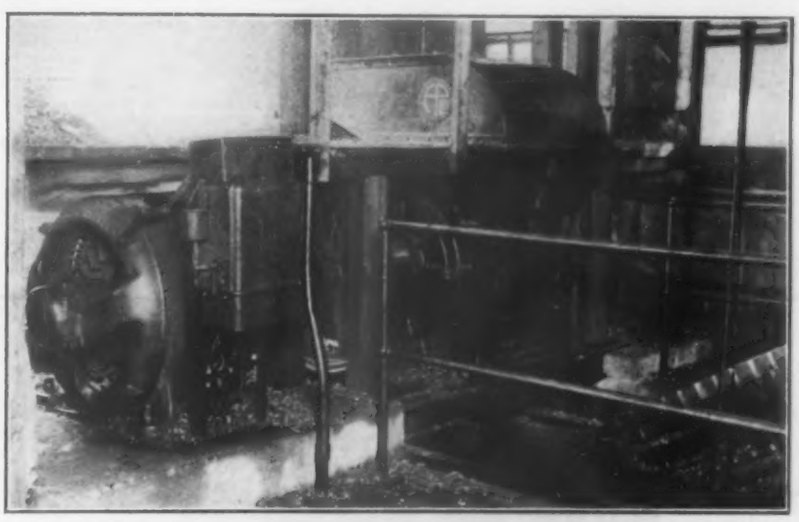
The whole back of the machine, on which the finger system is mounted, forms the apron which is pivoted and counterweighted so that when a larger piece of material than can be handled by the fingers alone has entered the machine, the apron is free to move outward. This provides a still larger opening beyond the grate bars through which such material may be discharged. The counterbalancing of the finger and the apron systems is a special feature and may be conveniently regulated by shifting the counterweights on their respective supports, similar to sliding the weight on a scale beam. In this way a close balancing of the fingers and apron is obtained, which is a salient point in the successful operation of the machine. The apron counterweight may be seen at *G*.

Inside parts of the machine employed in the actual crushing are of manganese steel; outside parts exposed to heavy stress are of cast steel. Two sizes, rated to crush 5 and 10 tons per hour, respectively, are available. They may be arranged for either belt

or direct motor drive, a 40 or 75 hp. motor, depending on the size of the machines, being recommended for the motor-driven unit.

The approximate dimensions of the larger machine are: height, 5 ft. 6 in. to top of hopper; width overall, 6 ft. 6 in.; length, without motor, 7 ft. 8 in.





Steel Turning Crusher Installation With Conveyor and Direct Motor Drive Is Shown at the Right. The upper view is of a different installation and shows the arrangement of the special feed hopper and a front view of the automatic apron and the counterweights. The details of the automatic apron may be noted from the lower right-hand view, the counterweight for the apron, counterweights for the fingers, and the opening for ejecting solid iron pieces being shown. The machine may be adjusted within limits to produce shoveling turnings of various sizes

The machine has been installed experimentally in a number of manufacturing plants within the past few months, particularly in automobile plants, where a large part of the turnings is of such a light, fluffy character that it has been difficult to find a market for them except in conditions of general scrap scarcity. Moreover, it is difficult to load more than 16 or 18 tons of the light, fluffy turnings in a freight car, while in the crushed form about twice that tonnage can be loaded in the same size car. This effects an economy in shipping which adds to the value of the crushed turnings.

It is announced that the main office force of the Steel & Tube Co. of America will be removed to Youngstown this month, arrangements to that effect now being under way. All of the affected employees will be given an opportunity by the Youngstown Sheet & Tube Co., which has purchased the Steel & Tube Co., to go to Youngstown if they so desire. Steel & Tube workers not choosing to go to Youngstown, or unable to leave Chicago, will be given a month's salary.

The Effect of Accelerators on Reinforcing Steel

A number of 1:2:4 concrete and 1:3 mortar specimens in which steel rods have been embedded were broken during the past month, and an examination made of the rods at the Bureau of Standards. Calcium chloride solutions had been used for some of the specimens as the gaging liquid. An examination was also made of expanded metal which had been embedded in small slabs prepared from mortar gaged with a proprietary compound of the accelerator type.

Some of the foregoing specimens were five and others six years old and all had been stored out of doors and exposed to the weather. From this examination, it is concluded that, while calcium chloride tends to corrode the reinforcement, the corrosion does not seem serious or of a progressive nature with age, in cases where the reinforcement is completely embedded in the concrete. However, when using accelerators, care should be taken to completely coat and embed the reinforcement and avoid pockets near it. The strength of the specimens which had been exposed to the weather was considerably higher when calcium chloride had been used than when it had not been employed. Sufficient specimens remain to allow another examination at a later date, and a comparison of the rod condition and strength will be made at different ages.

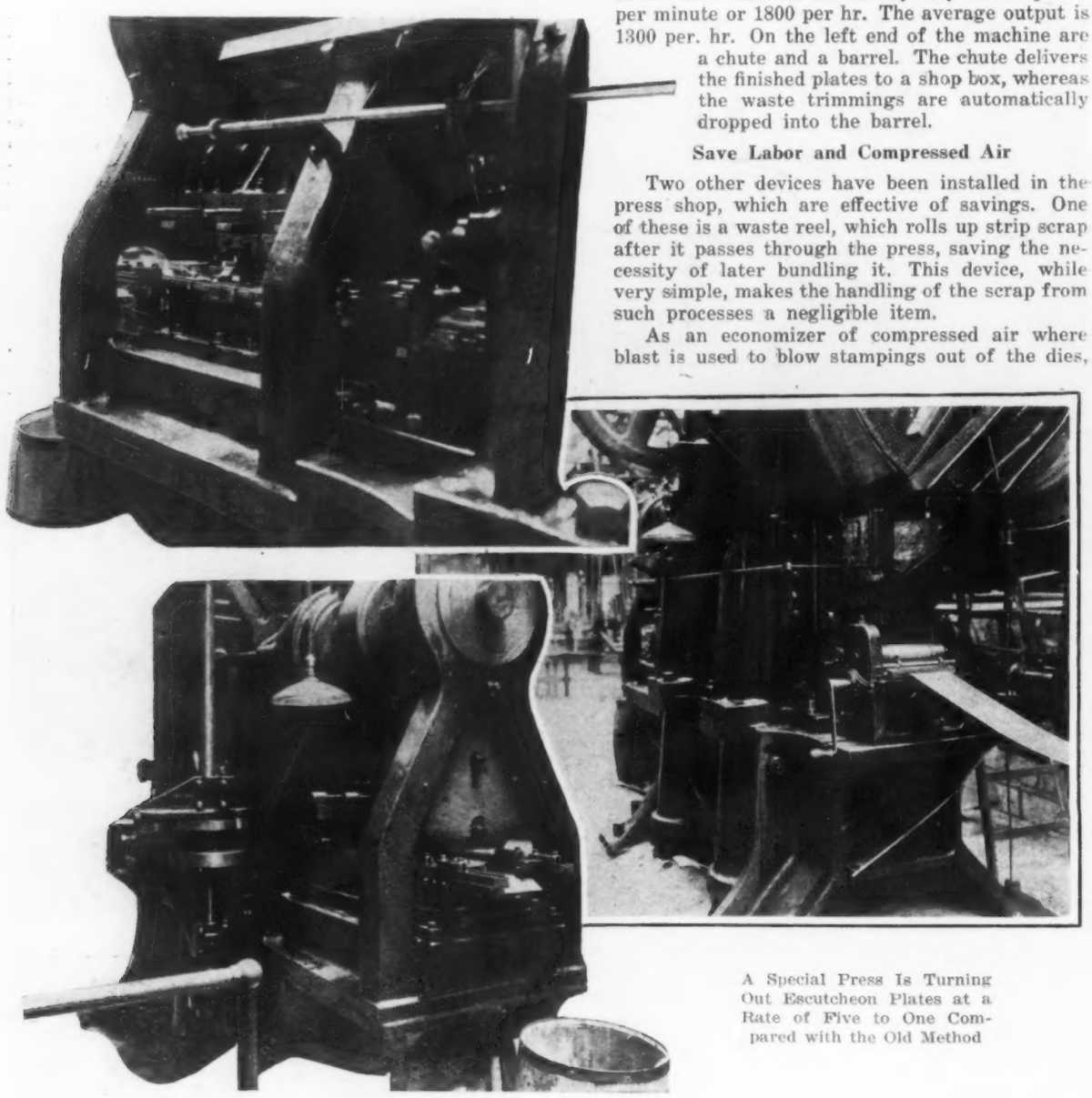
The Truscon Steel Co., Youngstown, is completing two new factory units at its main plant on Albert Street, which will be ready for occupancy Aug. 1. The company is transferring equipment purchased from the Central Steel Co., Massillon, comprising its steel joist department, to Youngstown.

MAKING DOOR HARDWARE

Economies Effected in the Works of the Yale & Towne Mfg. Co.

The general demand for improvements in manufacturing methods has led to development of a special press for the making of escutcheon plates at the plant of Yale & Towne Mfg. Co., Stamford, Conn., maker of builders' hardware, locks, and other products.

Plates are made from strip metal in brass or plated steel. There were six operations in the former process, consisting of cutting off, dropping or coining, trimming, punching, countersinking and stamping. These required one girl on the stamping operation and five men for the other five operations, together with a considerable amount of floor space to accommodate the presses and working room around them.



A Special Press Is Turning Out Escutcheon Plates at a Rate of Five to One Compared with the Old Method

In order to save floor space and utilize the labor on other work, the company installed a special press for doing all these operations in one pass through the machine.

Material is fed from a reel at the right end of the machine. It passes through a set of feed rolls, so controlled that they are actuated closely in synchronism with the stroke of the press. The six operations have been so combined that they are accomplished with only five dies. When the press is started, a completed escutcheon plate is dropped out on every stroke of the machine, starting with the fifth.

In appearance the machine would seem to be two double presses combined; a double straight side stamping press, and a double arch type toggle or knuckle press. As the strip passes through, the different operations are performed by the successive dies. An interlocking mechanism is incorporated in the design to prevent any mishap in the event of improper functioning of any of the dies or the roll feed mechanism. Should one of the dies become dulled or broken, so that it did not completely perform its duty, the interlocking mechanism would operate to stop the press. It is figured that the machine has saved on labor cost in a ratio of 5 to 1 on this operation, having released help for other work. It requires only one good man to operate it, as against six operators under the old method.

The calculated dead center pressure exerted is 600 tons. The machine has a capacity of 30 plates per minute or 1800 per hr. The average output is 1300 per. hr. On the left end of the machine are a chute and a barrel. The chute delivers the finished plates to a shop box, whereas the waste trimmings are automatically dropped into the barrel.

Save Labor and Compressed Air

Two other devices have been installed in the press shop, which are effective of savings. One of these is a waste reel, which rolls up strip scrap after it passes through the press, saving the necessity of later bundling it. This device, while very simple, makes the handling of the scrap from such processes a negligible item.

As an economizer of compressed air where blast is used to blow stampings out of the dies, a cam-operated air valve is used. This valve in the air line is mounted on ths side of the press below the crankshaft. It has a hardened button on its stem. A cam is placed on the end of the crankshaft, keyed in such a position that it strikes the button and opens the air valve on the return stroke of the press. The valve is closed by a spring when cam pressure is relieved from the button as the shaft revolves further.

Probably many persons have wondered how the key slot is machined in the cylinders of the Yale night latch or dead latch, as it is commonly called. This is accomplished in a vertical broaching press, rack operated. The cutter has a section that is zigzagged, corresponding to the section contour of the particular key

blank to be used. The cutting edge of the broach might be described in appearance as a combination of the common broach and a tapered saw. As the broach is pulled through the cylinder, the successive cutting edges on the taper advance into the work; the cutting edges of course being machined to follow the contour of the broach, thereby following the desired course in the cylinder and producing the correct slot profile.

Continuous Process Plating Machine

Leaving the machine shops and following the course of the escutcheon plates to the plating and polishing department, another interesting process is encountered.

Those plates which are made of steel strip are generally coated with brass or other non-corroding cover. The former process was to dip them for a more or less indefinite period in the common type of pickling, plating and washing vats. This method was not only slow, the pace made being entirely dependent upon the activity of the men handling the work, but was not satisfactory because of the variations in immersion time, which produced varying thicknesses of deposit.

To overcome these objections a special moving cathode machine has been developed which is not only a pace setter for the operator, but gives uniform immersion, hence uniform deposit. Further, with the moving cathode the plating solution is kept in agitation, and the salts uniformly distributed through the solution. The machine saves on labor, floor space, and power.

A Plating Machine Automatically Operated Sets the Pace for the Operator, and Assures Uniform Deposit

The essential features of the machine consist of a series of vats, a conveyor and a loading platform. At the loading platform while the work is moving, the operator loads the work on tee-shaped hangers by means of wires. Each hanger carries eight plates. Arranged in an oval are pickling and washing vats, the long plating vat and after plating washing vats. From the loading platform, the work travels around the track and returns to the loading platform to be removed and hangers reloaded. The hangers are suspended on rollers from the track. At the junction of one tank with another, the hangers ride up on an elevation in the track which lifts the work over the side of the tank and then lowers it into the next vat.

Negotiations are in progress between a committee of the bondholders of the Barney & Smith Car Co., Dayton, Ohio, for the sale of the property, and it is expected that a deal will be completed within a short time, as the majority of the bondholders are favorable to the proposition made for the purchase of the plant. While no definite information has been given as to the purchaser's identity, it is reported that one of the large railroad companies serving the territory is interested.

Conditions in Europe as Seen by Brudenell P. Boyle

Brudenell P. Boyle, assistant to the European manager, Westinghouse Electric International Co., who is on a short business trip to this country, expects a general but slow improvement in European business conditions. Mr. Boyle says the general tone in England seems to be toward stability. People there are becoming tired of the unsettled conditions and are making up their minds to take things as they are and make the most of them. Except for some of the poorer classes who are living on the unemployment doles of the Government and are content to remain idle, the average Englishman is anxious to get back to work and start production. Many of the war made fortunes have also been spent by this time and it is necessary for those who made them to settle down to production again.

Speaking of the Franco-German situation, Mr. Boyle says that there can be no real stability in Europe until the Ruhr matter is settled, and that he could see no prospect of a speedy settlement. He did not see how the French could withdraw from Germany now, nor did he think that they would do so unless there were a violent upheaval in France itself caused by industrial unrest. Since France is mainly an agricultural country, however, the majority of the population is fairly comfortable and is behind the Government. The most likely cause of a change in the situation, Mr. Boyle thinks, will come from Germany, where he expects a change of Government and a more frank attempt to pay off the indemnity. Mr. Boyle said that in spite of the fact that the French policy in the Rhur was bad for English business, the average Englishman is in sympathy with the French and considers that they are quite justified in their aggressive policy.

Investigation of Corrugated Zinc Roofing

In connection with an investigation of the properties of zinc roofing, cold tests were made during the past month on zinc nails and rivets. These were driven at room temperature, cooled to a low temperature by liquid air, and warmed up again to room temperature without producing any appreciable change. Driving the nails at temperatures from 0 to —40 deg. C. developed a brittleness in most of the nails, the heads flying off of those without fillets. In the case of nails with fillets, the heads did not break off. At —35 to —40 deg. C., some of the zinc sheet became brittle and cracked when pounded.

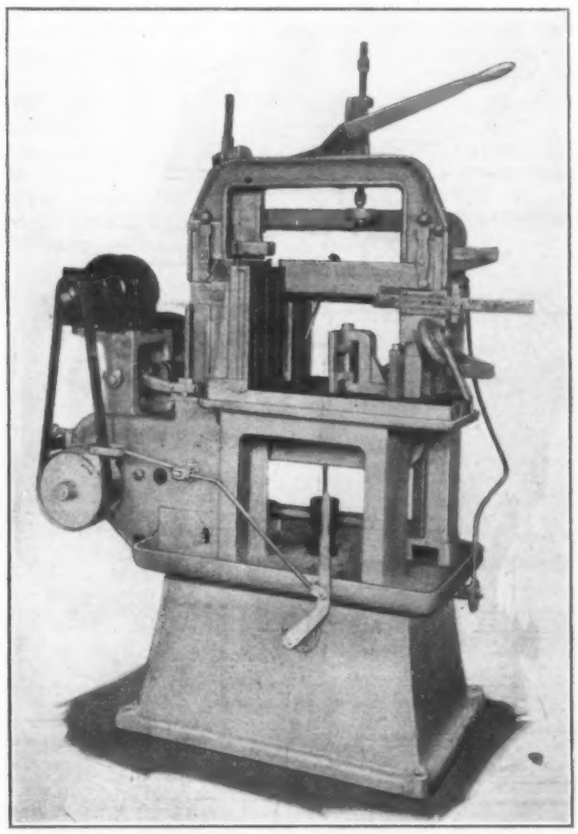
The bureau has requested those interested to submit a greater variety of samples to determine what types, if any, will endure such a test.

NEW UNIVERSAL SHAPING SAW

13 x 13 In. Capacity Machine with Improved Control—Blade Thrust Plate a Feature

A universal shaping saw of larger capacity and with added features, but otherwise similar to its previous machine, described in THE IRON AGE of March 9, 1922, has been placed on the market by the Peerless Machine Co., Racine, Wis. The new features include a saw blade thrust plate and dual control feed mechanism. The capacity is 13 x 13 in.

The frame will accommodate blades from 14 to 21 in. in length and the blade clamping apparatus is



Universal Shaping Saw of 13 x 13 In. Capacity. The saw-blade thrust plate and dual control feed mechanism are among the features. The thrust plate is intended to take the upward thrust on the blade and hold blade tooth points in a straight line

designed to permit of putting up to 10,000 lb. tension on the blade. The so-called thrust plate, which may be seen above the blade in the machine illustrated, is intended to take the upward thrust on the blade, and hold the blade tooth points in a straight line. The thrust on blades from 14 to 21 in. long often causes the blade to bow upward, the teeth nearest the ends of the blade doing the heavier cutting. The thrust plate arrangement is claimed to increase the life and efficiency of the blade by permitting all the teeth to do an equal amount of work. Tests made by the company are said to indicate that blades of 1 in. and even ¾ in. in width may be used safely. The thrust plate, which is 4 in. wide, 30 in. long and 0.048 in. thick, is of saw blade steel and receives tension through the use of two clamping straps. In addition, two set screws permit fine vertical adjustment so as to bring the thrust plate down to the blade for careful alinement.

The dual control feed mechanism feature is intended to reduce handling time. The operator may throw the feed on either side of the machine with one hand while the other hand is used to bring down the saw blade and frame to approximately cutting position, just prior to engaging the feed. The belt shifting gear is connected to the starting lever as shown, so that one straight-line forward motion shifts the belt onto the tight pulley, putting the saw frame in motion and engaging the feed. The dual control is said also to save time when the operator wants to stop the machine just after it has marked the cut, to see how near the line the cut is going to be.

A stop rod for automatically stopping the saw when the cut is completed, or at a predetermined point is also part of the saw frame mechanism. The rod is made telescopic in action by the use of a tubular member. In addition depth and height gages are provided on the screw above the saw frame. The height gage limits the height to which the large coiled spring lifts the saw frame.

The vise is said to have received careful attention. In this machine the distance from the floor to the bottom of the vise is 42 in. The vise table is the upper part of the bed that is bolted to the base of the machine. The front jaw is made up of an angle plate bolted in place. The rear jaw is brought forward by means of a screw and shoe arrangement. The screw accommodates fine adjustment with a total travel of 2 in. Provision is made for approximate or coarse adjustment.

The height of the front jaw is 15 in. An auxiliary front jaw or angle plate 10 in. wide is located at the other side of the saw blade to aline the work. Thus a piece of work 20 in. long is balanced on the vise table. The overall width of the vise table from the loading side to the outboard, bearing side is 18 in. Two T-slots are provided in the outboard bearing for clamping the work when required.

For angular cutting the auxiliary angle plate is removed and the front jaw swung around to any angle up to 45 deg. The capacity on a 45-deg. angle is 9 in. Attention is called to a square key, shown in the illustration, which is intended to assure square alinement of the vise. The front face of the rear jaw is rotated on a hinge pin. This jaw has a heel that alines it with the front jaw when straight cutting is done, but it may be swung around when angular or taper work is held in the vise. This construction is said to have eliminated the necessity of a sub-base, combining the use of angle plate, vise proper and swivel vise in one. A water trough is provided around the vise and pipes guide the water into the tank in the base.

Stroke speeds of 125,80 and 45 a minute, for mild, alloy and tool steels respectively have been provided. The motor bracket is standard and is designed for motors of 1 to 1½ hp. For belt drive the belting is from the lineshaft to tight and loose pulleys. The feed adjusting hand wheel is at the front of the machine. Pressures up to 200 lb. can be applied vertically to the blade. The blade travels back and forth in a horizontal plane.

The machine is 6 ft. 3 in. long, 2 ft. 7 in. wide and 7 ft. high. The weight is 2200 lb. net.

Curtailment of Coke Production

UNIONTOWN, PA., July 14.—A process of curtailment in the production of coke in the Connellsville region is apparent as buyers have withheld their contract requirements for the third quarter and last half. It is estimated that less than one-half of the regional production is under contract for the third quarter, with the result that the coke interests are curtailing their output to meet the demands. Purchases on the spot market are unusually heavy this third quarter as compared with other years due, no doubt, to efforts at beating down prices of coke. General opinion in the regoin is that the price level will not be lower. In fact, a stiffer trend is noted in the coke inquiries during the last two days of the week.

A little stronger trend is noted in coal, although this has not been reflected in increased production.

The Andrews Steel Co., Newport, Ky., will close down for a few days about Aug. 1, during which time new machinery will be installed in the rolling mills, including manipulators and tables. The mills will be put into operation as soon as the installations are completed. The mills of the Newport Rolling Mill Co., which were closed for a week for repairs, have resumed operations, and a steady run is contemplated.

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The Coming of the Short Day

As told in THE IRON AGE last week, some of the largest steel companies have been holding conferences of plant managers and department heads to make arrangements for the introduction of eight-hour working shifts. Some of these conferences have been almost simultaneous with the publication of further statements by hostile propagandists, to the effect that the steel manufacturers have been making promises of the eight-hour day with no accompanying effort to bring it about. However, the public will not be left long in doubt as to the facts. Evidently the labor union leaders who have aimed for years to get control of the steel industry and of the thousands of its workers who will not, if they can help it, submit to such control, are satisfied that the end of the twelve-hour day is in sight. One week ago they announced the starting of a new campaign to unionize the steel workers so as to secure the eight-hour day. Today they are assuring newspaper readers that they will not cease their efforts to organize the steel industry, "even when the eight-hour day is established there," and "when the funeral of the twelve-hour day finally comes we will rightly take credit for it."

In all the reports outside engineers have made on two-shift operations at iron and steel works it has been said repeatedly that progress toward the shorter day must be gradual. Such engineers have pointed out also that the cooperation of the men must be secured. That has been taken for granted in the theoretical views of the subject that have filled the daily press; but the fact is that not only workers themselves, but wives and mothers of workers—not ignorant and foreign born, but in many cases of American bringing up—have been heard time and again in protest against short working time, and this not more on the score of a lessened week's wage than of the untoward consequences of the long periods of idle time. The men know, if some uninformed writers do not know, that the hours actually worked in the twelve-hour shift in blast furnace operation have averaged in the case of one of the largest companies exactly 5.7, or less than 50 per cent of the nominal working time. There is good reason, therefore, for saying that one of the factors in bringing about the change will be the time required to secure the cooperation of the men. No little difficulty will be met with, in the case of the tonnage men, who, in compensation for the loss of tonnage will naturally seek a higher tonnage rate.

One thing that is likely to result as twelve-hour jobs are abolished is the employment of considerable percentages of the men ten hours a day. There was quite a little experimenting with ten-hour rolling mill turns in 1921. With the provision of added soaking pit facilities, it has been found possible to operate blooming mills on ten-hour turns without interfering with the flow of ingots from the open-hearth.

In open-hearth operations the problems presented, owing to the varying demand for the different forms of service, at intervals in the 24-hour period, are extremely intricate. Some of the proposals now brought forward involve for some classes of workers off-and-on periods, with considerable variations from straight eight-hour turns. Thus the wrenching of working times to which men have grown accustomed in many years of service will be so severe in many cases as to make the greatest problem of all that of inducing the worker to stay with the industry.

But with all its difficulties and consequences, for good and for ill, the coming in of the shorter day in iron and steel making is close at hand. Public sentiment, partly informed and largely uninformed, has called for it, regardless of economic consequences, but convinced apparently that the change will bring great social benefits. Steel workers and the tens of thousands of men and women who own the steel plants of the country may find the mandate of the public hard to bear, but the leaders of the industry have set their hands to the task and there will be no turning back.

In May British exports of iron and steel, for the first time since the beginning of the war, exceeded the pre-war record. At 424,500 gross tons they were 2 per cent above the monthly average in 1913 of 414,100 tons, scrap not being included.

The increase over 1913 was in seven major items: Tin plates and sheets; black plates and sheets; steel bars, angles and rods; hoops and strips; steel plates and sheets over ⅛ in. thick; wire and sleepers and fish plates. In galvanized sheets May was close to the 1913 rate, while steel rails were about 60 per cent. Pig iron and ferroalloys for May were 92,900 tons, compared with 93,700 tons per month in 1913. The British performance is all the more significant when compared with that of other exporting nations. American steel exports have dragged along until in May at 203,000 tons they were about 84 per cent of the 1913 monthly rate. German exports fell decidedly in the first quarter. For France the April figures show a decline to 70 per cent of the 1922 rate. Belgian exports have held up somewhat better. So far as Continental Europe is concerned, the export losses are directly traced to the Ruhr occupation. England's success, on the other hand, may be largely credited to the same cause, as well as to the absence of keen American competition. The British record is particularly noteworthy for being achieved in the face of rising fuel and labor costs.

Morale After the War

Everyone has been disillusioned as to the very active and profitable trade that was expected to come after the war. What many need still to recognize is that morale has been greatly impaired and that it will take a long time to restore it. The failure of commerce, to use the broader term, to follow the expected pace is due to conditions of mind more than it is due to physical conditions.

The change in mental attitudes has been the wider from the fact that during the war there was unusually great cooperation. Much, perhaps, could be said on the thesis that the change represents a purely mental reaction; that as men did a particularly great amount of team work during the war there was a natural reaction afterwards in the direction of every man wanting to look out for himself.

In the purely manufacturing industries the effects of lowered morale have been seen in various ways. There has been a recklessness in advancing and reducing prices that has produced very undesirable results, demand being impaired at one time and losses caused at another. Workmen have done poorer work and less of it.

The physical damage wrought on the battlefields, being visible or easily pictured, has received more attention than the mental damage throughout the world in lowered morale. If a nation has a certain physical equipment, in mines, factories and transportation facilities and a certain working capacity of the men that compose it, there is the same impairment of productive ability if the working capacity is reduced 10 per cent as if 10 per cent of the physical equipment is destroyed.

The practical question is how the world's morale is to be restored. It has become plain that we need not worry about physical construction, the building of ships, houses and factories. The important restoration is of desire to work and to work well, of faith one man in another and one nation in another and of willingness of every one to be a proper and useful part of the world's economic machine. Nature will reach the requisite end in time, but nature's ways are sometimes painful. Education in morals, or in the Golden Rule, to put it plainly, and in economics will help to smooth the way, but meanwhile it is well for every one to recognize that the whole world is suffering keenly from a greatly lowered morale, produced by the war, and that this decline in morale has had larger economic consequences than are commonly reckoned.

New British View on Machine Tools

A writer in *Engineering*, London, sets forth in a recent number the new British viewpoint in respect to machine tools. It reflects the influence of the intensive production of war times and is very close indeed to the American idea as it has evolved more slowly from a beginning antedating the war by years. Special emphasis is laid on two points. One is the economic necessity of modernizing machine shops. The other represents the acceptance of practice now well established among machine tool builders in the United States, under which the highly special single-purpose machine is preferred only in those relatively rare cases which call regularly for large scale outputs. According to this latter view the truly economical, money-making machine for ordinary quantity output is the high production semi-special standard tool with limited scope of usefulness when compared with general utility models, yet sufficiently adaptable to permit of adjustment to new dimensions and new uses. Regarding replacements, which in Great Britain as well as in this country now constitute the bulk of new business, the writer in *Engineering* says:

> Obsolescence should be the determining factor in the replacement of any high class machine tool, and where new machines or methods can be proved to make a profit on the expenditure they involve by reason of increased production and lower costs, then their installation is surely warranted. But here we are faced with the all-important question, "When is such a machine obsolete?" The conditions in the large manufacturing plant are totally different from those obtaining in the small shop. If a machine tool can show a profit on production and is capable of good work up to the required standard, the fact of its age does not necessarily make it obsolete. When it is questionable whether there would be a market for any increased output which could be obtained from a more up-to-date tool, the small manufacturer wonders whether the large capital expenditure for such a tool would be justified.
>
> If there is no prospect of increased business, then this attitude may be correct, but if there is reason to believe that good orders may be expected when trade revives, the purchase of a new machine is fully warranted by reason of the reduced costs immediately obtained and the possibility of increased production for the same overhead expenses and labor charges when manufacturing is again on a normal basis. Further, such improved tools, even when introduced in the small shops, serve to place our engineering methods and practice generally on a new and up-todate footing.

Even in the largest of British engineering establishments, we are told, "too often does the

initial capital outlay immediately loom up as the 'bogey' when new machines are spoken of, and this fact is apt to rule out of consideration the advantages to be derived from such machines. It is pleasing to note, however, that this shortsighted policy is gradually but surely giving way to a wider vision. The purchase of a machine tool is an investment and the return on such investment determines its value. The present state of trade has served acutely to remind manufacturers of the fact that haphazard methods or lack of definite methods cannot be tolerated, and every endeavor is necessary to place production on as near a 100 per cent efficiency basis as is practical."

The article urges a careful study of conditions before determining the machine which shall be purchased to replace that which is to be discarded. It is pointed out that the tendency to select a machine of the same type should be combated; all facts in the case should be kept in mind, including the essential one that machine tool makers are usually able to guarantee a production on their machines, and this enables an estimate in this direction to be readily made. As to the general type of machine, as between the one-purpose and the semi-special standard tool, these considerations are urged:

The class of labor to be provided for the new machine should also be borne in mind, for if careful setting, accurate reading, or any complex manipulations are necessary, then the most highly skilled operators will be needed, and unless these are found it is likely that many pieces will be spoiled, at the outset at any rate. To obviate this many engineers have favored single-purpose machines, but in these cases it is necessary to have a continuous production of standard components to keep such single-purpose machines successfully employed. Recognizing the value of some attention to this point, machine tool makers have endeavored to keep their designs as simple as possible and to strike a happy medium by producing standard types suitable for a number of uses. The result has been to enable purchasers to find in the range of standard tools those suitable for their own needs, without being involved in the purchase of special machines.

Varied opinions are held as to the relative advantages and disadvantages of these latter. Certain it is that the special machine does hold out advantages of its own, but in view of the fact that plant becomes obsolete when new designs afford increased profit on production, coupled with the wide range of standard machines available for varying requirements, this resolves itself into a question of whether the increased price for special machines is thoroughly justified. These latter are necessarily higher in price, since pattern costs have to be borne by the purchaser, and the advantages of repetition machining are not obtained in their production, repair parts also costing more than those for a standard machine.

The marked change taking place in the character of the materials used by British steel makers is pointed out by the National Federation of Iron and Steel Producers. Comparing the consumption, per ton of steel, of pig iron, scrap and other materials, it is shown that whereas 12.42 hundredweight of pig iron and 9.35 hundredweight of scrap were used per ton of ingots in 1920, there was a decrease by March, 1923, to 10.34 hundredweight of pig iron and an increase to 10.79 hundredweight of scrap per ton of ingots. The data are based on returns from companies responsible for between 70 and 80 per cent of the steel output of the country. In other words, the amount of scrap used has increased in a little over two years from 40 to 46.5 per cent of the total charge, with pig iron now 44.5 per cent instead of 53.2 per cent in 1920. The tendency toward a larger use of scrap is being accented with each year. Germany leads in the movement, as indicated by scrap importations of over 50,000 tons per month in 1922. Receipts of foreign scrap into the United States this year have surpassed all records of recent years at over 19,000 tons per month. It has been found possible to operate open-hearth furnaces, particularly basic, so that high-grade steel can be made more cheaply, with less pig iron. Undoubtedly this practice will increase, until less and less pig iron will be necessary. Should electric steel be more largely produced, more scrap and still less pig iron will be the rule.

Zinc Coating for Steel

At a recent meeting in Pittsburgh of representatives of the National Association of Sheet and Tin Plate Manufacturers and of the American Zinc Institute, it was stated that last year substitutes for zinc-coated iron and steel replaced 1,000,000 tons of sheets which would have required more than 100,000 tons of slab zinc for protective purposes. The statement was also made that nearly 60 per cent of the slab zinc used in this country goes into coating iron or steel. The meeting had been called for the discussion of zinc-coated materials and some who attended go so far as to say it is likely to be "epochal for both industries represented."

There has been dissatisfaction with some zinc-coated materials, variously ascribed to too little zinc and to improper methods of manufacture. The viewpoints of both consumers and manufacturers have been presented in public discussions of the subject (some of which have appeared in these columns), but there have been divided counsels among manufacturers as to the advisability of such discussion as a means of meeting the complaints of users of various galvanized products. In the circumstances the development of the plans set on foot at Pittsburgh will be awaited with no little interest. If an educational campaign is contemplated, in which producers of sheets and producers of zinc are to recognize their common interest, it is to be expected that the cooperation of users of coated sheets will be sought to the fullest extent. Naturally what the consumer wants and is willing to pay for will be the decisive factor in all questions of the market or of manufacturing practice.

The steel barges for use of the Tennessee Co. on the Warrior River between Birmingham and Mobile have begun coming from yards of the Alabama Dry Docks & Shipbuilding Co. at New Orleans. Eight are 25 by 140 ft. and one 50 by 280 ft. Warrior River locks are 52 by 285 ft. The new barges have covered hatches and are strongly built. Neatly fitting the locks, they will call for minimum of lockages at the 17 locks. They will be used principally in taking steel to the Pacific Coast and bringing up Brazilian ores for the Tennessee and American Steel & Wire companies as well as sulphur for district chemical plants.

ABOLISHING TWELVE-HOUR DAY

President Campbell Estimates Increased Cost—Plans of Other Companies

President James A. Campbell of the Youngstown Sheet & Tube Co., Youngstown, announces that the 12-hr. day will be abolished in all mill departments before the close of the current year. The 8-hr. day has already been pushed so far that less than 1000 additional men will be needed to establish it fully throughout the plants.

"It appears that introductions of the 8-hr. day made or to be made this year will increase the cost of steel about $3 per ton," says Mr. Campbell. "The public, however, seems to want the shorter day, and I suppose will not object to the higher steel costs. It will be necessary for some workmen to accept wage readjustments when the reduction in the number of working hours is effected."

This action by the Sheet & Tube company is especially significant in view of the fact that it occupies an outstanding position in the industry, employing in its three properties upward of 25,000 workmen. It also means that final abolishment of the 12-hr. day is under way in all Mahoning Valley plants.

The Republic Iron & Steel Co., which earlier in the year introduced the 8-hr. turn in its open-hearth department, has been gradually eliminating the 12-hr. day for the past four or five years. The Trumbull Steel Co., operating a plant at Warren, Ohio, has relatively few 12-hr. men left.

President Severn P. Ker announces that the Sharon Steel Hoop Co., Sharon, Pa., is preparing to abolish the long working day in all departments where practicable.

The 8-hr. day has been in effect in the sheet mills of the Mahoning Valley for many years.

Chicago Independent Steel Companies Will Follow Steel Corporation

CHICAGO, July 17.—Chicago independent steel companies will follow the lead of the United States Steel Corporation in the gradual adopting of the 8-hr. work day, but will form no policy of their own until the plan of the corporation has been put into effect. While labor supply is becoming slightly more plentiful, it is not yet apparent that there will be enough labor by Sept. 1 to man the mills to maintain the present rate of output on an 8-hr. basis. Of course there will be a return of workers to the mills after the season's crops have been harvested, but even so, some of the steel people in this district expect that the production may be curtailed somewhat by lack of sufficient labor under the 8-hr. plan. As somewhat decreased steel production will probably be needed to meet fall requirements, it is expected that the new arrangement of working hours will reduce output to a point more in keeping with probable demand, and this will of course tend to stiffen the price situation.

Steel Companies Will Make Change in Hours as Soon as Possible

NEW YORK, July 17.—Erroneous reports have been published in regard to the plans of the steel companies relating to the abolition of the 12-hr. day. A New York afternoon newspaper published an article on the subject, stating that the 12-hr. day would be abandoned in six weeks. A director of the American Iron and Steel Institute, when asked about this statement, said: "If that expression is used it is used in the sense of a man who intended to go around the world, making the start next Wednesday and he should say he was going around the world next Wednesday. Evidently he couldn't go around the world next Wednesday. He could make a start on that day, however.

"The 12-hr. day cannot be abolished unless and until there is sufficient labor—sufficient in numbers—to permit it. The industry might start it within six weeks, but how long it will take to finish it no one can tell at this time, because no one can say what the surplus of labor will be."

Although it is impossible to make so important a change quickly, the steel companies are moving as rapidly as possible. Some conferences have been held and others will be called at an early date. One of the meetings will be of operating officials at the office of President Farrell.

A manufacturer who has had long experience in the operating departments of the different steel companies said Tuesday: "One trouble will be to get the men to work only 8 or 10 hours. Most of the men, especially those in small towns where there are very few means of amusement, are anxious to work long hours. Sometimes the men who are on a 6-day schedule will work a seventh day by going to the plant of another company. If the hours of all employees are changed to 8 or even to 10 hours, many adjustments will be necessary as to working conditions and wages, and the task will not be an easy one."

Pittsburgh Sees Some Serious Problems to Be Solved

PITTSBURGH, July 17.—Steel manufacturers in this district are approaching the matter of the establishment of the 8-hr. day rather slowly. The ramifications are many, and it is not going to be a simple matter to convince workmen now engaged for the longer periods to accept the proposition of reduced wages in keeping with the reduced working period. Plate and bar mill men are paid on a tonnage basis and prefer the longer day, since it means greater earnings. If forced to accept the 8-hr. day, they naturally would seek a higher tonnage rate than now is being paid. This also is the case with common laborers, who probably would not accept the short work day if it means the loss of two hours' pay. The point is also made that if the 8-hr. day is established, there will be many cases where men will attempt to work two turns and the end sought of providing the workmen with more time for their families and recreation would be at least partially defeated.

How long it will take to establish the shorter day in the industry is purely a matter of conjecture. Some seem to believe that it can be accomplished in six months, while others place the time at a year. Investigations have not yet reached a stage where it is possible to provide a real idea as to how costs will be affected by the change.

Management Association Plans Meeting

It is planned to hold the 1923 convention of the American Management Association at the Hotel Astor, New York, Oct. 29 to Nov. 1.

Convention program committees are being formed. Part of the one day conference of the plant executive division will be devoted to the report of the sub-committee on apprentice systems, of which L. L. Park, supervisor of welfare, American Locomotive Co. is chairman. Other topics selected for discussion include following up a foreman training program, and the relation between the employment department and the foreman.

No Organizing in Southern Ohio

CINCINNATI, July 16.—To date there has been no activity apparent on the part of the organizers of the American Federation of Labor to unionize the steel plants in the southern Ohio and northern Kentucky districts. Practically all of the employees of these plants are now, and have been for some time past, working an 8-hr. shift, and as a result one of the greatest arguments for unionization has been eliminated. Steel mill officials do not expect any difficulties from labor troubles developing in this district.

BRITISH IRON AND STEEL MARKET

Pig Iron and Steel Markets Dull—Japan a Heavy Buyer on the Continent—French Book British Rail Order

LONDON, ENGLAND, July 17.

The pig iron market is dull with prices easier, but Germany has bought fair quantities of foundry and hematite iron.

The finished iron and steel market is dull on account of the Scottish holidays. Producers maintain a firm attitude as to prices and are not inclined to reduce them. Foreign buyers at the same time are reluctant to pay the prices asked. China has bought plates, angles and shapes and Japan has purchased locomotive boiler material.

The foreign ore market is quiet and there are sellers of Rubio at 23s. to 23s. 6d ($5.29 to $5.40), ex-ship Tees.

June exports of iron and steel were 365,148 gross tons, of which pig iron exports were 35,639 tons.

Continental prices are advancing with Japan the chief purchaser of all kinds of material. Belgian plants are reported booked full through October and German plants fully sold three months ahead on domestic business. Wire rods are scarce with Belgian producers asking £10 5s. to £10 10s. ($47.05 to $48.20) f.o.b.

In Germany activity among the Ruhr steel works is diminishing; 21 blast furnaces are now blowing against 32 on June 1 and 85 in January. The coke output is less than 5000 tons per day. The French have seized stocks of raw and finished material at the Thyssen works at Mulheim on the Ruhr. The Eisen und Stahlwerks Hoesch at Dortmund have been occupied. The capital of the Rheinische Stahlwerke has been exhausted by wages and maintenance costs and the capital stock is being increased heavily to make good the damage to the Duisburg works. The French are loading up finished material seized at Gutehoffnungshuette. French fuel seizures are still well below the rate ruling before the advance into the Ruhr.

In France De Wendel & Co. are reported to have booked a 25,000-ton rail order for the United Kingdom. Tin plates are steady at minimum prices, but business is generally quiet with the hot weather affecting the output and some mills closed. Galvanized sheets are steady. Japanese buying of black sheets is fair on a basis of £19 (3.89c. per lb.) f.o.b. for thin specifications.

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.59 per £1, as follows:

Durham coke, delivered	£2	1½s.				$9.53		
Bilbao Rubio ore†	1	4				5.48		
Cleveland No. 1 foundry	6	0				27.59		
Cleveland No. 3 foundry	5	7½				25.16		
Cleveland No. 4 foundry	5	0	to	5	1½	23.00	to	$23.55
Cleveland No. 4 forge	4	17½				18.78		
Cleveland basic	5	10				25.20		
East Coast mixed	5	2½				25.55		
Ferromanganese	18	0				92.00		
Ferromanganese*	20	0				91.20		
Rails, 60 lb. and up	9	10	to	£10	0s.	43.70	to	46.00
Billets	7	10	to	8	10	34.50	to	39.10
Sheet and tin plate bars, Welsh	9	2½				41.61		
Tin plates, base box	1	3	to	1	3⅛	5.26	to	5.28
						C. per Lb.		
Ship plates	9	15	to	10	5	2.00	to	2.11
Boiler plates	12	10	to	13	0	2.56	to	2.66
Tees	10	5	to	10	15	2.11	to	2.20
Channels	9	10	to	10	0	1.95	to	2.05
Beams	9	5	to	9	15	1.90	to	2.00
Round bars, ¾ to 3 in.	11	0	to	11	10	2.26	to	2.36
Galvanized sheets, 24 g.	17	15	to	18	0	3.64	to	3.69
Black sheets, 24 gage	13	10	to	13	15	2.77	to	2.82
Black sheets, Japanese specifications	15	5				3.13		
Steel hoops	12	0	&	12	10*	2.46	&	2.56*
Cold rolled steel strip, 20 g.	£17	5s.				3.54		
Cotton ties, Indian specifications	15	0				3.08		

*Export price. †Ex-Ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports, Delivery as Specified

Foundry pig iron:								
Belgium, July	£5	5s.	to	£5	7½s.	$24.15	to	$24.71
France, July	5	5	to	5	7½	24.15	to	24.71
Luxemburg, July	5	5	to	5	7½	24.15	to	24.71
Billets:								
Belgium, July	6	10	to	6	12½	29.90	to	30.45
France	6	10				29.90		
Merchant bars:						C. per Lb.		
Belgium, July	7	15	to	8	0	1.59	to	1.64
Luxemburg, July	7	15				1.59		
France	7	10				1.54		
Joists (beams):								
Belgium, July	7	7½	to	7	10	1.51	to	1.54
Luxemburg	7	15				1.59		
France	7	10	to	7	12½	1.54	to	1.57
¼-in. plates:								
Belgium, July	8	5	to	8	10	1.69	to	1.74
⅜-in. plates:								
Luxemburg	7	15				1.59		
Belgium	7	10				1.54		

Steel Furniture Shipments

WASHINGTON, July 17.—The Department of Commerce announces June shipments of steel furniture stock goods based on reports received by the Bureau of the Census, in cooperation with the National Association of Steel Furniture Manufacturers. Shipments by 22 manufacturers amounted to $1,401,950 in June as against $1,506,072 in May and $1,015,463 in June, 1922. The accompanying table gives comparative figures for the first six months of 1923 and 1922.

	1923	1922
January	$1,362,470	$983,834
February	1,307,173	967,125
March	1,709,206	1,087,228
April	1,520,286	1,058,382
May	1,506,072	1,056,735
June	1,401,950	1,015,463

June Bookings of Steel Castings

WASHINGTON, July 17.—Department of Commerce figures based on reports received by the Bureau of the Census in cooperation with the Steel Founders' Society show for June a slight decline from the May tonnage of commercial steel castings. The bookings in June by companies representing more than two-thirds of the commercial castings capacity of the United States amounted to 84,878 net tons compared with 89,463 net tons in May. The accompanying table shows the bookings of commercial steel castings for the past six months by 65 companies with a monthly capacity of 96,900 tons, of which 38,300 tons would usually represent railroad specialties and 58,600 tons miscellaneous castings.

Bookings of Commercial Steel Castings

	Total		Railroad Specialties		Miscellaneous Castings	
Month 1923	Net Tons	Per Cent of Capacity	Net Tons	Per Cent of Capacity	Net Tons	Per Cent of Capacity
January	100,605	103.8	47,879	125.0	52,726	90.0
February	90,152	93.0	39,845	104.0	50,307	85.8
March	143,564	148.2	76,409	199.5	67,155	114.6
April	90,968	93.9	39,610	103.4	51,358	87.6
May	89,493	92.4	38,788	101.3	50,705	86.5
June	84,878	87.6	42,773	111.8	42,105	71.9

Basing Point Hearing Resumed

WASHINGTON, July 17.—Presentation of evidence by the United States Steel Corporation in the Pittsburgh plus case was resumed before Examiner John W. Bennett of the Federal Trade Commission in Washington today. A. C. Winter, of the Illinois Steel Co., was the witness. He summarized exhibits previously offered and also presented additional contracts made during the years 1909 and 1913.

LUXEMBURG CONDITIONS IMPROVE

Acute Coke Shortage Although German Coke Shipments Increase—American Coke Unsatisfactory—Mills Booked with Cheap Orders

LUXEMBURG, July 6.—The situation in Luxemburg improved perceptibly in June, and particularly toward the end of the month. The works have known a long period of insufficient and unprofitable production, and will, as a matter of fact enjoy no advantage from the present firmness of the market (if this is maintained), until old orders, which were accepted at a loss have been liquidated. Costs will undoubtedly be governed for some time by the prices of coal and coke, and, indirectly, by the fact that the American coke, which is still arriving, is of such poor quality that same has to be mixed at a proportion of 25 per cent at the most with continental coke. The cost of American coke has also increased as a result of the expenses occasioned by the Belgian railroad strike, the consequent detainment of vessels in Antwerp and difficulties experienced in trans-shipping coke to Luxemburg. On the other hand, more regularity in the arrival of German coke is noted.

As the Belgian market is rising, it is evident that the Luxemburg market must follow, although the output is slow; and Luxemburg, as well as Lorraine works, demand higher prices than those quoted by Belgian makers. Numerous orders have been received, in Belgium, from South America, North Africa, Spain and the Near East. Foundry iron No. 3 is firmer, and the latest quotations are 460 fr., Belgian currency. In agreement with Belgian sellers, Lorraine and Luxemburg works have increased the price of semi-finished products and sales have been made at 550 to 560 fr. (Belgian currency) for blooms and 570 to 575 fr. for billets. Following is a list of the furnaces in blast in Luxemburg on July 1:

Luxemburg Blast Furnace Operation on July 1

	No. in Blast	Total Furnaces
Arbed:		
Esch	5	6
Dudeldange	3	6
Dommeldange	1	3
Terres Rouges:		
Belval	4	6
Esch	0	..
Hadir:		
Differdange	4	10
Rummelange	0	..
Rodange:	2	3
Steinfort:	2	3

In Antwerp, Luxemburg steel is scarce, as a result of the output being severely curtailed to about 50 per cent of capacity because of the persistent coke shortage. However, a few small orders for bars have been taken at about 650 fr. (Belgian currency) f.o.b. Antwerp.

JAPANESE BUY RAILS

Orders for 10,000 Tons Placed—Additional Inquiry for Tin Plate

NEW YORK, July 13.—Orders for 10,000 tons of rails, small bookings of angles and splice bars and further inquiries for tin plate are all that break the spell of quietness in export business. Supplies in many sections are considered low, but the desire to replenish stocks is wanting, obviously due to the lack of confidence in the situation. Continental makers are still the favorite bidders on most products and seem likely to be for some time, their quotations on thin sheets, angles and bars being about 10 per cent below this market.

Independent Japanese buyers placed 7000 tons of 75-lb. rails and 3000 tons of 60-lb. rails with Suzuki & Co. It is estimated that Japan uses between 80,000 and 100,000 tons of rails yearly. Only a portion of this amount has been placed this year, hence one large importer feels reasonably justified in expecting sizable inquiries before long. Angles and splice bars, about 450 tons in all, were placed at about $73 c.i.f. Japan. So strong is continental competition in these products that business placed here is small.

Tin plate is still the liveliest product. Iwai & Co., Ltd., has taken an order for 9500 boxes, and the Nippon Oil Co. will take bids, this time for 18,000 boxes, on July 16. Nothing has developed from the other inquiries mentioned last week. Extensive building plans have been completed in several of Japan's larger cities, it is learned, but execution of these plans in most cases awaits stabilization in market conditions.

Although actual business with China continues to be generally dull, several inquiries have been made for quotations on scrap. There is one inquiry for 3000 tons of structural material and further small inquiries for copper and structural steel. An exporter with good connections in China says there will be large orders for copper to be placed later, buyers apparently waiting only for lower price levels. Moderate purchases of copper and brass have been made. Demand for copper from the mints in China has suffered a severe setback, but this will be offset later, it is hoped, by demand from makers of electric wire. The unfavorable rate of exchange is a barrier to free purchasing of copper.

The Brazilian Government has contracted for improving the harbor and for the construction of modern port works at Ilheos, in the State of Bahia. The total expenditure called for is 4,600,200 milreis (approximately $500,000 at current exchange), and will include dredging, quays, warehouses, cranes, rolling stock, and other port apparatus, paving, and facilities providing for water, light, and sewage disposal. The South Manchuria Railway Co. is contemplating the electrification of railway lines on the Dairen wharves. When the company reaches a decision in regard to the matter, even if no foreign aid is required for the work of installation, electric locomotives and material will have to be purchased from abroad. Firms interested should address the Director of the Machinery Division, South Manchuria Railway Co., Dairen, Manchuria.

There is softening in demand as well as in price of imported ores, and, while other forces may be at work, the deciding factor is the uncertainty of pig iron. One large importer made quotations on three orders, but no business followed. It appears that the prices now quoted are 1c. to 2c. per unit too high to attract orders. Limited tonnages of French iron, equivalent to foundry No. 1, are being offered at $29, c.i.f. Atlantic port, and iron of 2.50 to 3 per cent silicon at 50c. less. Late September delivery is offered on both grades. An importer of Scotch foundry iron is quoting about $32 per ton, c.i.f. Atlantic port, for No. 3, but looks for few orders. With two wage increases recently granted to English miners and more trouble imminent, there is scant hope for lower quotations, unless for unusually large tonnages.

More Employed in Detroit

DETROIT, July 17.—Despite the seasonal reduction in the output of automobiles and the accompanying "change of models" period, the figures of the Detroit Employers' Association show that there was a gain of 903 in the past week, with a total of 222,948 employed by the 79 firms reporting to the association. This is approximately 6000 below the peak, which was reached during the last week in May.

Decline of Union Strength in the South

BIRMINGHAM, ALA., July 17.—The International Mine Workers' Union has suspended the Alabama district organization's autonomy because the membership had grown so small that it was not self supporting. The State organization, which is more than 30 years old, was dissolved and the International union has placed International representatives in charge of the small remnant of union locals that is left.

Iron and Steel Markets

TO REDUCE OUTPUT

Sharp Curtailment in Pig Iron Planned

Finished Steel Prices Generally Maintained—Eight-Hour Day Not a Market Factor

A sharp reduction in pig-iron output is promised in the next 30 days, with a relatively smaller decline in steel production. Thus far definite evidence of a falling off in actual consumption of steel has been lacking, but the reduction of order book totals goes on, while buying at today's higher prices is carefully limited.

A canvass made by Cleveland ore producers indicates that about 30 blast furnaces are likely to go out before the middle of August. Some of them have already piled large amounts of iron.

The Steel Corporation, which apparently took on less new business than the independents in June, being unable then to promise deliveries, has averaged 6000 tons a day more in orders this month than in the first half of June. Some other producers have not done so well and are nearer to the time when fresh tonnages will be needed.

The fact that consumers are taking deliveries so fully under their contracts, some cases being still reported, particularly at Chicago, in which the mills are being pressed for steel, has helped producers to hold prices. Efforts are being made to buy bars at less than 2.40c. and plates and shapes under 2.50c., but on these key products new business is still done at the prices named.

An expectation of lower prices is plainly governing the policy of many buyers, but meanwhile there are indications that stocks in consumers' hands are on a smaller scale than in April, when the peak in steel production was reached.

Preparations for the change from the 12-hour to the 10-hour and 8-hour day in steel works are under way in several organizations, and substantial progress is expected by the year-end. Increased cost is conceded, but does not figure as yet as a market factor. Buyers recognize that when the steel works labor supply shows a material increase steel will also be more plentiful than it is today.

Railroad consumption of steel holds up and the roads expect to buy more cars, but look for lower prices later in the year. The falling off in new building contracts is still a factor, but July is rather more than meeting expectations. In the automobile industry the plans of the makers show much more confidence for the remainder of the year than the prophecies from the outside.

The week's structural awards amounted to about 16,000 tons, the largest being for 4500 tons for a generating station at St. Paul. Inquiries represent about 15,000 tons and include 10,500 tons for tank work and 2800 tons for a New York pier.

Returns from 152 fabricating firms show 112,000 tons booked in June or about 50 per cent of capacity. At the same rate for non-reporting firms, the June total was 127,500 tons, against 145,000 tons in May and 202,000 tons in April.

Some increase in the available supply of semi-finished steel is noted and a sale of slabs has been made at $40 by an Ohio mill.

A slight increase of interest has been shown in the pig iron market, but there have been further price recessions in several centers, particularly in eastern Pennsylvania, where the decline is from 50c. to $1. Quotations on foreign iron are also down in harmony with the domestic market.

In the export trade railroad inquiry is more active. South America and India want about 11,000 freight cars. Colombia has placed 3000 tons of rails with the Alabama mill.

Japan has added 10,000 tons to the considerable list of its rail purchases in the United States this year. More orders are yet to come for Japan's extensive track-standardizing program.

European mills have made the lowest bids on Japanese rails lately, but their deliveries are uncertain. However, Japan is buying freely of other forms of steel from Continental mills at advancing prices.

In the Ruhr only 21 blast furnaces are now active against 32 on June 1 and 85 in January. The French have seized further steel works. In France De Wendel & Co. are reported to have taken a 25,000-ton rail order for the United Kingdom.

THE IRON AGE pig-iron composite price for this week is $25.86 per gross ton. This is $5 below the high point reached in March and 18c. below the figure for last week.

As for the past 10 weeks, THE IRON AGE composite price for the seven leading forms of finished steel stands at 2.789c. per lb., as against 2.446c. on Jan. 1 and 2.169c. in mid-July last year.

Pittsburgh

Steel Buying Diminishing—Pig Iron Weak, with Few Sales Recorded

PITTSBURGH, July 17.—Business in steel again is on a dwindling scale because buyers are getting ample supplies on old orders and manufacturers still having a fair amount of business upon their books are not making very active efforts to secure more. Buyers lately have become satisfied that higher prices in the immediate future are unlikely; indeed, in view of the decline in primary material, they have swung around to expectation of lower prices and any selling activity on the part of the mills just now would only serve to confirm that idea. This condition explains the absence of important price changes in the past week. Estab-

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 17, 1923	July 10, 1923	June 19, 1923	July 18, 1922
No. 2X, Philadelphia‡	*$27.56*	$28.26	$30.76	$27.64
No. 2, Valley furnace†	*25.00*	26.00	27.00	24.00
No. 2, Southern, Cin'ti†	29.05	29.05	29.05	21.53
No. 2, Birmingham, Ala.†	25.00	25.00	25.00	18.00
No. 2 foundry, Chicago*	28.00	28.00	31.00	24.00
Basic, del'd, eastern Pa.	*26.50*	27.00	28.14	25.75
Basic, Valley furnace	25.00	25.00	27.50	24.00
Valley Bessemer, del P'gh.	28.26	28.26	30.27	26.77
Malleable, Chicago*	28.00	28.00	31.00	24.00
Malleable, Valley	*25.50*	26.00	28.00	24.50
Gray forge, Pittsburgh	*26.26*	27.26	28.27	25.27
L. S. charcoal, Chicago	36.65	36.65	36.65	31.65
Ferromanganese, furnace	*117.50*	120.00	125.00	67.50
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$40.00
Bess. billets, Pittsburgh	42.50	42.50	42.50	35.00
O.-h. billets, Pittsburgh	42.50	42.50	42.50	35.00
O.-h. sheet bars, P'gh	42.50	42.50	42.50	35.00
Forging billets, base, P'gh.	47.50	47.50	47.50	40.00
O.-h. billets, Phila.	47.67	47.67	50.17	40.17
Wire rods, Pittsburgh	51.00	51.00	51.00	40.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.40	2.40	2.45	1.70
Light rails at mill	2.25	2.25	2.25	1.75
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.67	2.67	2.72	1.925
Iron bars, Chicago	2.50	2.50	2.50	1.90
Steel bars, Pittsburgh	2.40	2.40	2.40	1.70
Steel bars, Chicago	2.60	2.60	2.60	1.75
Steel bars, New York	2.74	2.74	2.74	2.04
Tank plates, Pittsburgh	2.50	2.50	2.50	1.70
Tank plates, Chicago	2.80	2.80	2.80	1.75
Tank plates, New York	2.84	2.84	2.84	2.04
Beams, Pittsburgh	2.50	2.50	2.50	1.70
Beams, Chicago	2.70	2.70	2.70	1.75
Beams, New York	2.84	2.84	2.84	2.04
Steel hoops, Pittsburgh	3.15	3.15	3.30	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	July 17, 1923	July 10, 1923	June 19, 1923	July 18, 1922
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.85	3.85	3.85	3.15
Sheets, galv., No. 28, P'gh.	5.00	5.00	5.00	4.15
Sheets, blue an'l'd, 9 & 10	3.00	3.00	3.00	2.40
Wire nails, Pittsburgh	3.00	3.00	3.00	2.40
Plain wire, Pittsburgh	2.75	2.75	2.75	2.25
Barbed wire, galv., P'gh.	3.80	3.80	3.80	3.05
Tin plate, 100-lb. box, P'gh.	$5.50	$5.50	$5.50	$4.75
Old Material, Per Gross Ton:				
Carwheels, Chicago	*$20.50*	$21.00	$21.50	$19.50
Carwheels, Philadelphia	20.00	20.00	23.00	17.50
Heavy steel scrap, P'gh	*18.00*	18.50	21.00	17.25
Heavy steel scrap, Phila	*16.50*	17.00	18.00	15.00
Heavy steel scrap, Ch'go	*17.00*	17.25	17.50	15.50
No. 1 cast, Pittsburgh	*21.00*	21.50	23.50	19.00
No. 1 cast, Philadelphia	21.50	21.50	22.00	17.50
No. 1 cast, Ch'go. (net ton)	*19.00*	20.50	21.50	17.00
No. 1 RR. wrot. Phila.	*18.00*	19.00	23.00	17.00
No. 1 RR. wrot. Ch'go. (net)	14.50	15.00	15.50	13.50
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	*$4.50*	$4.75	$4.75	$11.00
Foundry coke, prompt	*5.25*	5.50	5.50	11.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	**15.00**	14.87½	15.37½	14.00
Electrolytic copper, refinery	**14.50**	14.25	14.87½	13.75
Zinc, St. Louis	**6.12½**	6.05	6.00	5.75
Zinc, New York	**6.47½**	6.40	6.35	6.10
Lead, St. Louis	**5.90**	5.70	6.95	5.50
Lead, New York	6.00	6.00	7.25	5.75
Tin (Straits), New York	*38.00*	38.25	40.25	31.50
Antimony (Asiatic), N. Y.	**6.85**	6.75	6.75	5.00

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price July 17, 1923, Finished Steel, 2.789c. Per lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

July 10, 1923,	2.789c.
June 19, 1923,	2.789c.
July 18, 1922,	2.169c.
10-year pre-war-average,	1.689c.

Composite Price July 17, 1923, Pig Iron, $25.86 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

July 10, 1923,	$26.04
June 19, 1923,	28.21
July 18, 1922,	23.61
10-year pre-war average,	15.72

lishment of the 8-hr. day in the steel industry will bring about increased manufacturing costs, but the extent of the increase still is uncertain, as is also the time when the change can be effected, and so far there is little concern among buyers as to the possibility of higher prices.

Finishing mill operations no longer are running in excess of steel works activities; indeed, there having been only a slight decline in ingot production against a fairly substantial one in finishing mill operations, there now is some surplus of unfinished steel and the market in that direction shows unmistakable signs of an easier tendency. A northern Ohio mill recently took about 1500 tons of slabs at $40, mill, and buyers claim ability to secure billets, sheet bars and slabs at the same figure f.o.b. Pittsburgh or Youngstown. There is really not enough going on in semi-finished steel to clearly define prices.

Efforts to check the downward tendency of pig iron prices have not met with much success, because the only demand that is developing is from buyers who believe that the market is at bottom and there are not many buyers who believe that at present, while producers who have iron for sale are a little anxious to sell it.

Scrap prices continue to recede and since curtailment of coke production has been accompanied by a smaller consumption due to the falling away in blast furnace activities, that market does not show much strength. The coal market shows a stronger tendency, not because of any material increased demand, but rather because there has been a drastic curtailment of production.

Pig Iron.—Buyers evidently are not yet convinced that bottom has been reached, and business over the past week in this market has been even lighter than it was the week before. Pressure to sell the steel-making grades possibly is not so heavy as it was recently, but considerable competition has developed on a few inquiries which have come out lately for foundry iron, which has forced a decline of as much as $1 a ton in the price of that grade. The market also is soft on malleable iron. This grade is offered at $25.50, Valley furnace, and while some producers still are asking $26, sales are lacking at either figure. The Link Belt Co. has closed for 3000 tons for its Indianapolis plant and

it is understood that this tonnage was placed at a delivered price of slightly under $27 and that the iron will come from a Cleveland furnace. We note sales of Bessemer iron aggregating about 400 tons at $26.50, Valley furnace, or Valley furnace basis. Pittsburgh melters were the buyers. No important sales of basic iron are reported. All producers are publicly quoting $25, furnace, on this grade, but iron held by middlemen is offered for less, there being one lot of 7000 tons which is offered at $24.50, and the entire lot probably could be bought at $24. Business in foundry iron has been almost entirely in small lots, and at prices ranging anywhere from $25 to $26. The lower figure is not being quoted by any of the furnaces, but is being developed by definite offers from buyers. Westinghouse Electric & Mfg. Co. wants 600 tons of foundry iron. The Valley maker of low phosphorus iron has reduced his price to $34, furnace, for copper free iron, while the Bethlehem Steel Co. is quoting $33, Lebanon, and as low as $29, furnace, is named by another Eastern interest having a large stock of this iron for sale. Fannie furnace of the M. A. Hanna Co., West Middlesex, Pa., has been blown out.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$25.00
Bessemer	26.50
Gray forge	$24.50 to 25.50
No. 2 foundry	25.00 to 26.00
No. 3 foundry	24.50 to 25.50
Malleable	25.50 to 26.00
Low phosphorus, copper free (nominal)	34.00

Ferroalloys.—Recent reduction of $7.50 a ton by British makers of ferromanganese has been met by domestic producers, and the common quotation now is $117.50. There is no more demand at the lower figure than at the former quotation because consumers in this district are well covered against their requirements for the remainder of the year, and shipments on contracts are free and full. Some doubt exists that even the reduced quotation can be maintained because considerable quantities of both domestic and imported material are in the hands of middlemen and can be bought at less than quotations. Interest in the other ferroalloys also is very limited. There is no quotable change in prices, but there is so little being done that they are altogether untested. Prices are given on page 177.

Semi-Finished Steel.—Makers still are holding to recent prices on billets, sheet bars and slabs, but there is almost no demand and quotations find practically no basis in sales. Finishing mill operations have decreased to a relatively greater extent than ingot production, and there is not a mill in the district that does not have some accumulation of semi-finished material. Non-integrated manufacturers are well stocked and are sparing both in specifications and in their purchases. They note that pig iron has gone off $6 a ton or more in price from the high point of the early part of the year and that there has been a drop of $9 a ton in scrap, while current prices of semi-finished steel are practically the same as those which ruled on the bulk of the shipments during the second quarter. Users of forging billets seem to have settled upon $47.50 base as their maximum price idea, and efforts to obtain more are meeting with little success. There are also some accumulations of wire rods at local mills, due to the fact that makers are not operating their finishing departments as heavily as formerly, while those who are producers who buy their rods also are in a quieter time. The common quotation still is $51 base, but this price is largely nominal. The skelp market is weak at 2.40c., with almost no demand. Plate mills are not fully taxed by demands from plate users, and to keep them going more or less, skelp is being produced. A sale of 1500 tons of slabs for shipment West is noted at $40 for a northern Ohio mill. It is believed that a firm bid of $40, Pittsburgh or Youngstown, would uncover slabs, sheet bars and billets at mills in those districts. Prices are given on page 177.

Wire Products.—Demand still is quiet as regards both orders and specifications. A good many consumers as well as distributors are engaged in taking semi-annual inventories and consequently are not adding to their commitments. The trade expects business to revive considerably in the next 30 days. Mills are catching up pretty steadily with their old orders, but this has caused no softening of prices, although there is more eagerness for specified orders and a few contracts with large jobbers are being entered. Prices are given on page 176.

Steel Rails.—Makers of light rails, rolling them from new billets or new standard rail crops, still are holding to 2.25c. base, and claim they are obtaining that price on such business as they are doing. Their orders, however, are pretty limited, due to the fact that operations of commercial coal mines are not much in excess of 50 per cent of capacity, while they also have considerable competition from rerolled rails, which are quoted at 2.15c. base, and even as low as 2.10c. base. The local rail unit of the Steel Corporation is committed against production over practically all the remainder of this year, and on such standard rail inquiries as have been received, late fourth quarter shipment is the earliest promise. Much tonnage taken for delivery over the first six months of this year still is to be shipped.

We quote 25 to 45-lb. sections, rolled from new steel, 2.25c. base; rolled from old rails, 2.10c. to 2.15c. base; standard rails, $43 per gross ton mill for Bessemer and open-hearth sections.

Tubular Goods.—Strictly new business in both steel and wrought iron pipe and tubes is very limited, but the uniform report of producers is that buyers are taking all the material due them on old orders and that pressure for deliveries against merchant pipe orders is really heavy. Some makers of steel pipe claim to be sold solidly for the next three or four months, but there are others who can make deliveries as quickly as four and six weeks, and in half that period on plain end line pipe. Discounts given on page 176.

Sheets.—Independent manufacturers who announced two base prices on blue annealed sheets when they opened their books for third quarter business, quoting 3.25c. base for No. 13 gage and lighter and 3c. for No. 12 gage and heavier have quite generally abandoned the differential for light gage material, and have written down such 3.25c. business as they had taken to 3c. base. The general situation shows no particular change. Buyers are well covered by orders or contracts for the present quarter, and as they are getting ample shipments against them, their current purchases are very small. In the main, the regular market prices are fairly well observed. Competition from plate mills is believed to be responsible for the revision and adjustment of prices of blue annealed sheets. Mill operations have come back somewhat from the holiday suspensions but still are below the June rate, which for the industry as a whole, was slightly under 80 per cent. Prices are given on page 176.

Tin Plate.—Hot weather is having the usual effect upon the efficiency of workmen, and production is not nearly so large as it should be with the demand unusually heavy, particularly from the makers of perishable food containers. Most mills are giving shipping preference to this class of material, but at that are not satisfying their customers, and there is a strong possibility of a pinch in the supply before the packing season is over. Stock tin plate is scarce. The market may be regarded as firm at $5.50 per base box Pittsburgh.

Bolts, Nuts and Rivets.—Buyers are exerting considerable pressure for shipments against old orders in bolts and nuts, but new buying is very limited. This statement is equally true about rivets, and while prices show no change, concessions are being offered against desirable business. Prices and discounts are given on page 176.

Cold-Finished Steel Bars and Shafting.—While buyers are specifying fairly well against contracts and orders already in with the makers, new business is very light. Makers continue to quote 3.25c. base, Pittsburgh, for carload lots, and are pretty firm at that figure, but this condition is due more to the higher costs of hot-rolled bars, embodied in the new card of extras recently adopted, than to the size of the current demand for cold-finished bars. Ground shafting is unchanged at 3.65c. base, f.o.b. mill.

Hot-Rolled Flats.—Explanation for a quotation as low as 3c. base for hot-rolled strips is partly found in competition from plate mills. Demand for plates from tank, car and shipbuilders is not sufficient to fully engage the capacity and, as a fill-in tonnage, material which could be classed as plates, skelp or heavy gage strips is being taken. This is a common occurrence in dull markets and manufacturers need the tonnage to keep their plate mills going. Most of the independent companies still regard 3.30c. base as the regular market price not only on hot-rolled strips but on hoops and bands. Not much business is on mill books at that figure, however, and current orders and specifications are only fair. The Carnegie Steel Co. is quoting 3.15c. base on these several products. Specifications against cotton tie orders are reported to be good, although shipments since July 14 carry the higher rates in effect to most Southern points. Prices are given on page 176.

Cold-Rolled Strips.—Trading is rather slow in this product. New demands are moderate, and buyers are specifying against contracts sparingly. Independent makers still are quoting 5.25c. base, while the Steel Corporation price is 5c. base.

Track Fastenings.—Manufacturers are well supplied with business in all products under this heading except small spikes, and while new business is of moderate proportions, there is not much tendency to stimulate it by cutting prices. Low rate of commercial coal mine operations explains the dullness in small spikes. Prices are given on page 176.

Iron and Steel Bars.—Current demands for steel bars are few and small because buyers are getting ample supplies on contract shipments. There are no intimations of price cutting in merchant bars, but it is reported that as low as 2.25c. recently was done on a large lot of reinforcing bars. Independent bar makers generally have adopted the card of extras recently issued by the Carnegie Steel Co. There is no change in iron bars, but demand is very light.

We quote soft steel bars, rolled from billets, at 2.40c. base; bars for cold-finishing of screw stock analysis, $3 per ton over base; reinforcing bars, rolled from billets, 2.40c. base; refined iron bars, 3.25c. base, in carload lots or more f.o.b. Pittsburgh.

Structural Material.—There is no change in prices, but mills generally are advancing their promises of deliveries against new business. Prices are given on page 176.

Plates.—Inquiries are fairly numerous, but generally run to small tonnages. Evidently there is not enough business to fully engage plate capacity, as strip makers ascribe low prices on their product to plate mill competition and recent passing of the differential on light gage blue annealed sheets probably is due in part to the need of fill-in tonnage for the plate mills. Since the price of 2.50c. base, Pittsburgh, carries very prompt delivery, there is an impression that on a large tonnage on which shipment could be made at convenience of the mill, a lower price would come out. Prices are given on page 176.

Cut Nails.—Leading manufacturers have announced a cut of $3 per ton to the base of $3.25 f.o.b. mill in carload lots.

Coke and Coal.—Coke prices are still soft despite the fact that there has been a considerable let-down in production. The weakness of the pig iron market makes uncertain continuous operation of a number of furnaces now in blast, and those producers who do not contract for third quarter tonnages continue to meet their requirements by spot purchases. Some coke has been thrown back upon the market as the result of blast furnace suspensions which have recently occurred, and disposal of this coke is possible at low prices. Sales have been made of such coke as low as $4.25 per net ton at mines, while on fresh production the spot market is quotable from $4.50 to $5. The contract market on furnace grade based on the last business of this sort is $4.75. Spot foundry coke is quotable from $5.25 to $5.75, a drop of 25c. a ton from last week's prices, while last half contracts are being placed at $6.50 generally. With commercial coal mines in this district not operating on an average more than three days a week, and a large number of mines entirely idle, there is less competition for passing business and this has resulted in slightly firmer prices. We make no change in steam coal, which still ranges from $1.75 to $2 for mine run grade, but on coking coal the market is not below $2.35, while on gas coal $2.50 has become the prevailing price. Steam slack generally is held at $1.25 and gas slack at $1.50.

Old Material.—Still further recessions in scrap prices have occurred since a week ago due to the fact that there has been no increase in the consumptive demand, while dealers obliged to take tonnages on purchases or contracts, which must be sold or thrown down on their yards, find they must go pretty low to make sales. In the past week, there was one sale of heavy melting steel at $19.50 at Butler, Pa., while we also note sales of this grade for Monessen, Pa., delivery at prices ranging from $18 to $18.50. A dealer who participated in a large sale to a local mill several weeks ago claims to have bought this grade of material against that sale as low as $17.50. This evidently was a small "distress" tonnage, because dealers, as a rule, are not willing to sell below $18. Other open-hearth grades show a decline corresponding to that of heavy melting steel, but the new prices are merely appraisals and not based on sales. The most recent business in short shoveling turnings was at $16. It is commented upon that a very much better average quality of material is being offered at today's prices than was being shipped when the market was on a much higher level. This is probably explained by the fact that the dealers are absorbing the railroad offerings, and do not consider prices low enough to put all of their purchases through the yards. There are some mills in this district which regard the kind of heavy melting steel now to be had at $18 to $18.50 as a good investment regardless of immediate changes in prices. The spread between heavy melting steel and basic pig iron also is wide enough to make the latter look pretty cheap by comparison.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$18.00 to $18.50
No. 1 cast, cupola size	21.00 to 21.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	19.00 to 19.50
Compressed sheet steel	16.50 to 17.00
Bundled sheet sides and ends	15.00 to 15.50
Railroad knuckles and couplers	21.00 to 21.50
Railroad coil and leaf springs	21.00 to 21.50
Low phosphorus standard bloom and billet ends	23.00 to 23.50
Low phosphorus plates and other grades	22.00 to 22.50
Railroad malleable	18.50 to 19.00
Steel car axles	21.50 to 22.00
Cast iron wheels	20.00 to 20.50
Rolled steel wheels	21.00 to 21.50
Machine shop turnings	12.00 to 13.00
Heavy steel axle turnings	15.50 to 16.00
Short shoveling turnings	15.50 to 16.00
Cast iron borings	15.50 to 16.00
Heavy breakable cast	17.50 to 18.00
Stove plate	15.00 to 15.50
Sheet bar crop ends	21.00 to 22.00
No. 1 railroad wrought	15.00 to 15.50

Western Fluorspar Deposits

Results of an examination of the various Western fluorspar deposits made by R. B. Ladoo, mineral technologist of the Department of the Interior, are set forth as follows in Serial 2480, just issued by the Bureau of Mines. The production of acid fluorspar west of the Mississippi River from ore bodies now known probably will not exceed 100 tons annually. It is believed that not over 3000 tons of ground fluorspar can be annually produced, of which one-third will be low grade. It was estimated that the properties visited in the Western States can produce for a few years a maximum of 13,000 tons annually of a grade of gravel analyzing on an average 5 per cent or higher in barite, and a maximum of 4000 tons of fluxing lump. The farther Western steel mills, on account of the difficulty of obtaining fluorspar in gravel form, have been accustomed to use in their open-hearth furnaces both lump and gravel. Western mills likely will go on using Western fluorspar on account of high freight rates.

Chicago

Specifications Are Still Heavy, But Buying Is Not Brisk

CHICAGO, July 17.—Despite the usual midsummer lull in the placing of new tonnage, Chicago district mills are receiving liberal specifications on contracts. Present definite orders on the books indicate a pretty full operation throughout the next three or four months, and it is expected that enough new tonnage will drift in during the next month or two to assure continuity of the present rate of operation throughout the year. Without any marked change for the better, there have been several indications during the past week that the lethargy of buyers as regards new business is gradually disappearing. Most of the new tonnage is in structural steel lines, and the volume of work which has been placed in the past week is unusual for this season of year.

Including 7000 tons for the new plant of the Ford Motor Co. at St. Paul, Minn., which will be placed probably within a day or two, the total volume of fabricated steel work reported to Chicago offices during the week exceeds 18,000 tons.

New demand for the steel products used mostly by manufacturing consumers, such as plates, bars, sheets, etc., is not brisk, but the Chicago mills are being pressed for deliveries on contracts. Surprisingly little letup in demand from automobile companies and railroads has developed, and in fact the leading interest reports that the pressure for deliveries of steel from these sources is as acute as at any time this year. Companies engaged in drop forging work, especially those catering to automobile companies, are especially insistent on hurrying shipments.

Steel plant operations continue at about the same rate reported a week ago. The Illinois Steel Co. has blown out its No. 1 furnace at Joliet, Ill.

Pig Iron.—The first signs of an awakening interest among buyers of pig iron have come within the past week, but there are still no indications of a buying movement. A few inquiries have been received, one for 2500 tons of foundry iron for delivery over the remainder of the year, another for 1000 tons and a few others for smaller amounts, probably, a total of not to exceed 5000 or 6000 tons. However, this is more inquiry than the local trade has had to figure on at any one time in several weeks. Quoted prices remain unchanged at $28 for No. 2 foundry, Chicago furnace, and while sellers believe that the bottom has been reached, it remains true that the prevailing prices have as yet had no real test. Southern iron has shown a little more weakness, sales having been made for delivery at points outside of Chicago at $24.50, Birmingham, while speculative iron has been offered as low as $24. Local pig iron offices are expecting an announcement of lower prices on Lake Superior charcoal iron, but just when the expected reduction will be made or how much it will be, are not known. Copper free low phosphorus iron is now available at about $35.50 to $36, delivered Chicago.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yard or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago..	$36.65
Northern coke, No. 1, sil. 2.25 to 2.75	$28.50 to 29.00
Northern coke, foundry No. 2, sil. 1.75 to 2.25	28.00 to 28.50
Malleable, not over 2.25 sil.	28.00 to 28.50
Basic	28.00
High phosphorus	28.00 to 28.50
Southern No. 2	30.51 to 31.01
Low phos., sil. 1 to 2 per cent, copper, free	35.50 to 36.00
Silvery, sil. 8 per cent (nominal)	43.29

Plates.—The Chicago Bridge & Iron Works has taken another contract from the Sinclair Crude Oil Purchasing Co. for 10 80,000-bbl. oil tanks to be erected at Mexia, Texas, for which 3000 tons of steel, mostly plates, will be required. Railroad car buying is light, but railroads are specifying freely on contracts to provide material for car repairs. Pittsburgh and Youngstown plate mills, although anxious for business, are taking very little in this territory, as Chicago mills, though pretty well filled up, are generally able to find rollings that are acceptable to customers. The mills east of here are also out of it on account of price as they are quoting 2.84c. per lb,, delivered Chicago or nearby, which compares with 2.60c. f.o.b. Chicago mill.

The mill quotation is 2.60c. to 2.80c., Chicago. Jobbers quote 3.30c. for plates out of stock.

Ferroalloys.—Foreign ferromanganese is being offered by British selling agents at $117.50, New Orleans, with a freight rate to Chicago of $7.56, but resale ferromanganese has been offered at $115, New Orleans, and 50 per cent ferrosilicon is available at $90, delivered, though some producers still hold their price at $92.

We quote 80 per cent ferromanganese, $125.06 to $125.88 for all deliveries; 50 per cent ferrosilicon, $92.50, delivered; spiegeleisen, 18 to 22 per cent, $53.58, delivered.

Rails and Track Supplies.—The Pere Marquette Railroad has placed 10,000 tons of 90 lb. rail, of which 5000 tons will be rolled by the Illinois Steel Co., 4000 by the Bethlehem Steel Co., and 1000 by the Inland Steel Co. Formal contracts have been entered into by the New York Central Lines for the 150,000 tons of rails for which reservations were made a few weeks ago. The Illinois Central has also placed contracts for a part of the 60,000 tons it reserved. The inquiry of the Chicago, Burlington & Quincy for 40,000 tons is still pending, but will probably be closed soon. Two inquiries from industrial railroads in Texas, one for 2000 tons and the other for 1000 tons, are being quoted on by local mills. Inquiry for track supplies is fairly heavy for this time of year. The Chesapeake & Ohio and the Pennsylvania railroads are each in the market for about 1000 tons of tie plates. The Southern Pacific requires 5000 kegs of spikes and the Chicago, Milwaukee & St. Paul, 1000 kegs, while the Chicago, Burlington & Quincy will shortly be in the market for a fairly large lot of spikes and track bolts. An export inquiry for 500 tons of tie plates is active but the business probably will not come to a Chicago mill because of freight disadvantage in shipping to seaboard.

Standard Bessemer and open-hearth rails, $43; light rails, rolled steel, 2.25c., f.o.b. makers' mills.

Standard railroad spikes, 3.25c. mill; track bolts with square nuts, 4.25c. mill; iron tie plates, 2.85c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.90c. base and track bolts, 4.90c. base.

Structural Material.—A substantial volume of structural steel tonnage has been placed in the past week, considering the reported let up in building construction and the fact that this is between seasons of normal activity. Including the 8000 tons for the Ford Motor Co.'s new plant at St. Paul, which probably will have been let before this issue goes to press, a total of more than 28,000 tons for the week strikes a high average for July business. Close to 2000 tons for the sub-structure of the new Chicago Tribune Building was taken by the American Bridge Co. Two electric power plants at St. Paul just awarded require a total of more than 6000 tons.

The mill quotation on plain material is 2.60c. to 2.70c., Chicago. Jobbers quote 3.30c. for plain material out of warehouse.

Bars.—There is very little new bar tonnage coming to the mills but specifications on contracts are fairly good and the mills have a place to ship every ton that is being rolled. Prices remain steady.

Mill prices are: Mild steel bars, 2.50c. to 2.60c., Chicago; common bar iron, 2.50c. to 2.60c., Chicago; rail steel, 2.30c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 4.55c. for rounds and 5.05c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 3c. base; hoops, 4.55c.; bands, 3.95c.

Sheets.—Specifications on contracts have come in to one or two mills this week at a rate higher than expected. There is little, if any, weakness in prices and on galvanized sheets in particular the market appears to be particularly firm due to the disinclination of some mills to take on more business at 5c. per lb, Pittsburgh, because of the high cost of galvanizing. An advance in spelter within the past week has added some strength also to the galvanized sheet price.

Mill quotations are 3.85c. for No. 28, black 3c. for No. 10 blue annealed and 5c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.
Jobbers quote f.o.b. Chicago, 4.35c. for blue annealed, 5.20c. for black and 6.35c. for galvanized.

Wire Products.—Although demand for wire nails from the cities where building construction work is active continues good, the country districts are not supplying much business. New business is light in volume, but production, which has fallen off slightly, is not keeping pace with requests for shipments on contracts, and some mills are considerably behind.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.90 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, $3.95 per 100 lb.; cement coated nails, $3.25 per keg.

Bolts and Nuts.—Although discounts are generally on the basis of 50, 10 and 10 per cent off list on large machine bolts, occasional desirable orders are being taken by one or two sellers at slightly higher discounts. Specifications are not coming in as freely as desired, but the first month of a quarter usually finds this condition, as the carry over from the previous quarter is taking care of current requirements in most instances.

Jobbers quote structural rivets, 4c.; boiler rivets, 4.10c.; machine bolts up to ¾ x 4 in., 45 and 5 per cent off; larger sizes, 45 and 5 off; carriage bolts up to ¾ x 6 in., 40 and 5 off; larger sizes 40 and 5 off; hot pressed nuts, squares and hexagons, tapped, $2.50 off; blank nuts, $2.50 off; coach or lag screws, gimlet points, square heads, 50 and 5 per cent off.

Warehouse Prices.—Local steel jobbing houses have put into effect the same extras as the mills have recently adopted on steel bars and bar size shapes.

Cast Iron Pipe.—The city of Chicago took bids on July 16 on 500 tons of 8-in. class B pipe and Dayton, Ohio, closed bids July 17 on 400 tons of 10-in., 100 tons of 6-in. and 40 tons of 3-, 4- and 8-in. Jerseyville, Ill., has placed 600 tons, mostly 10-in. pipe, with the United States Cast Iron Pipe & Foundry Co. Most of the cast iron pipe foundries are operating at a full rate. Prices are firm.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $64.20; 6-in. to 12-in., $60.20; above 12-in., $58.20 to $59.20; class A and gas pipe, $5 extra.

Reinforcing Bars.—Buying is slowly receding, and while a few important concrete bar dealers are not active in the market because of their heavy backlogs, competition is, nevertheless, growing keener and it is doubtful whether any current orders are being placed at more than 3c., Chicago warehouse. Bar sellers are experiencing little difficulty in obtaining deliveries from the mills.

Lettings include:

Liberty Memorial Building, Kansas City, Mo., 800 tons to Kansas City Bolt & Nut Co.

Drainage project, Riverdale, Ark., 250 tons to Pigeon-Thomas Co., Memphis, Tenn.

Headhouse and concourse, Chicago Union Station Co., Chicago, 190 tons to Inland Steel Co.

Pending business includes:

City of Chicago, bridges over the Chicago River at California Avenue and Adams Street, 360 tons.

Fourteenth Street viaduct, St. Louis, 1100 tons, contract about to be placed.

Old Material.—Railroad offerings of nearly 13,000 tons of scrap are now before local consumers and scrap dealers, and this with the scrap that is being offered from other sources, coupled with the fact that there is very little demand, has further weakened the scrap market. Prices on nearly all grades are off 50c. or more a ton. The Rock Island Lines offer 3400 tons of scrap, bids closing July 19, the Wabash list has about 3200 tons, bids closing July 18, the Illinois Central offers 1000 tons of rails, bids closing July 18, the Chesapeake & Ohio will close bids July 19 on 4000 tons, the Soo Lines have 250 tons to move and George W. Jennings, Inc., has 1000 tons of railroad steel on which bids close July 19. There is no sign of strength in the market and consumers and dealers are equally at a loss to determine when a recovery in demand and prices may be expected.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$22.00 to $22.50
Cast iron car wheels	20.50 to 21.00
Relaying rails 56 and 60 lb.	28.50 to 29.50
Relaying rails, 65 lb. and heavier	32.00 to 35.00
Rolled or forged steel car wheels	20.50 to 21.00
Rails for rolling	18.00 to 18.50
Steel rails, less than 3 ft.	19.50 to 20.00
Heavy melting steel	17.00 to 17.50
Frogs, switches and guards cut apart	17.00 to 17.50
Shoveling steel	16.50 to 17.00
Drop forge flashings	11.50 to 12.00
Hydraulic compressed sheets	14.25 to 14.75
Axle turnings	14.50 to 15.00
Per Net Ton	
Iron angle and splice bars	22.00 to 22.50
Steel angle bars	15.50 to 16.00
Iron arch bars and transoms	22.00 to 22.50
Iron car axles	26.00 to 26.50
Steel car axles	18.00 to 19.00
No. 1 busheling	13.25 to 13.75
No. 2 busheling	10.50 to 11.00
Cut forge	15.00 to 15.50
Pipes and flues	11.00 to 11.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	15.00 to 15.50
Steel knuckles and couplers	18.75 to 19.25
Coil springs	20.00 to 20.50
No. 1 machinery cast	19.00 to 20.00
No. 1 railroad cast	18.50 to 19.00
No. 1 agricultural cast	18.50 to 19.00
Low phos. punchings	16.50 to 17.00
Locomotive tires, smooth	15.50 to 16.00
Machine shop turnings	9.50 to 10.00
Cast borings	12.00 to 12.50
Short shoveling turnings	12.00 to 12.50
Stove plate	14.50 to 15.00
Grate bars	13.00 to 13.50
Brake shoes	14.00 to 14.50
Railroad malleable	20.00 to 20.50
Agricultural malleable	19.00 to 19.50

Decreasing Blast Furnace Operations in the Valleys

YOUNGSTOWN, July 17.—An accumulation of pig iron and the decreasing cost of scrap is tending to check blast furnace operations in the Mahoning and Shenango Valleys. Among the stacks particularly affected are merchant furnaces dependent on the market for coke supplies, and the least efficient units among steel makers' furnaces.

Two of the detached stacks of the Carnegie Steel Co. in this district are inactive, one at Niles and the other at Sharon. The Hannah furnace at Youngstown of the Republic Iron & Steel Co. is also idle. Both the Republic company and the Youngstown Sheet & Tube Co. are preparing furnaces for suspension during relining.

A number of merchant stacks have been banked in this district, leaving 39 furnaces active out of 46.

A factor in this situation is the decline in the price of old material. Heavy melting scrap, for instance, has dropped from a high of $28.50 to about $18.50, and consequently is being used in the open-hearth in larger tonnages than heretofore, replacing pig iron.

Sheet mill operations are accelerated this week, with the plants of the Newton Steel Co. and the Mahoning Valley Steel Co. again active, following idleness in the past two weeks for repairs and inventory.

Sheet mills in this district were scheduled for operation at the beginning of the week as follows: Youngstown Sheet & Tube Co., 42; Newton Steel Co., 17; Trumbull Steel Co., 15; Sharon Steel Hoop Co., 9; Republic Iron & Steel Co., 8; Mahoning Valley Steel Co., 7, and Falcon Steel Co., 6, or a total of 104.

Of 51 independent open-hearth furnaces in the Mahoning Valley, 45 were scheduled this week.

New York

Some Increase in Inquiry for Pig Iron, But Sales Are Few and Prices Low

NEW YORK, July 17.—The pig iron market has shown greater activity during the past week than for a month or more. The Burnham Boiler Co. is in the market for 5700 tons of No. 2X and No. 2 plain for delivery, as follows: At Irvington, N. Y., 3000 tons; Elizabeth, N. J., 2300 tons; Lancaster, Pa., 400 tons, all for the last half of this year. The Connecticut Foundry Co. is in the market for 1000 tons of No. 1X for last quarter. The former inquiry of W. M. Crane has been withdrawn and he is now in the market for 300 tons of No. 1X for prompt delivery. Another inquiry has come from the Gould Coupler Co., Depew, N. Y., for 2000 tons of malleable and 2000 tons of foundry, although an inquiry for the same tonnage was recently reported as closed. Sales have, however, been few and prices are low. At Buffalo $25 is the ruling quotation on No. 2 plain, with quotations in eastern Pennsylvania ranging from $26 to $26.50, while in Virginia $27 is still quoted. Despite the increased inquiry, the market has not gained strength.

We quote delivered in the New York district as follows, having added to furnace prices $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2X fdy., sil. 2.75 to 3.25	$29.27
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	28.77
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	28.27
Buffalo, sil. 1.75 to 2.25	27.91
No. 2X Virginia, sil. 2.25 to 2.75	32.94
No. 2 Virginia, sil. 1.75 to 2.25	32.44

Cast-Iron Pipe.—The situation is unchanged as far as makers of pressure pipe are concerned. Foundries are well booked for the next couple of months and prices are firm. The difficulties encountered in obtaining labor are the only obstacles to full operation. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $62.30; 4-in. and 5-in., $67.30; 3-in., $77.30, with $5 additional for Class A and gas pipe. In sharp contrast to the market on pressure pipe, foundries producing soil pipe report extreme dullness and marked irregularity in prices. Quotations today are only nominal, with some Southern makers seeking tonnages at unusual increases in discounts. But little business is reported, however, buyers evidently preferring to await any further decline that may occur. We quote discounts of both Southern and Northern makers, f.o.b. New York, in carload lots, as follows: 6-in. standard, 28 to 30¾ per cent off list; heavy, 38 to 40¾ per cent off list.

Warehouse Business.—The market is extremely quiet in all lines and prices, with the exception of sheets, substantially unchanged. The black and galvanized sheet market continues weak, with black sheets ranging in price from 4.65c. to 5c. per lb. base, and galvanized from 5.65c. to 6c. per lb. Still lower prices are reported to have been made occasionally. The range of prices that has recently prevailed on cold-rolled shafting has been eliminated by an increase put into effect by several sellers from stock who had continued on the old basis when one large factor in this market raised prices to 4.65c. per lb. for rounds and 5.15c. per lb. for squares, flats and hexagons. The prices out of stock for tin plate have been revised in accordance with changes made by the mills. Discounts on wrought iron and steel pipe are the same, but there are continued reports of shading by some sellers from stock. Brass and copper products are unchanged. We quote prices on page 192.

Finished Iron and Steel.—Extreme dullness pervades the entire market, with practically no new business or inquiry of consequence in any of the leading products. Several sellers characterize conditions as seasonal and likely to continue for several weeks. Sales representatives of most of the steel companies do not detect any easing in prices and do not expect any. With the exception of a slight drop in quotations for black sheets, noted a week ago, the price situation remains fairly firm. Consumers of galvanized sheets are reported as looking for lower prices, and their policy seems to be to purchase their limited needs from warehouses at 5.50c. rather than to contract with the mills on a basis of 5.34c. In steel plates almost no business is reported, and the basis price of 2.50c. has not been as yet shaded, partly because there has been no test of the market. There have been occasional sales of steel bars in small lots to consumers needing them for filling-in purposes, but on other leading products there has been practically no activity. New business in concrete bars is reported to continue at a standstill. The only activity of any consequence has been in inquiries for projects involving structural material. In this district new projects have been brought to the attention of fabricators involving over 14,000 tons, but actual business awarded has scarcely exceeded 4000 tons. The feature of the inquiries is over 10,000 tons for tanks for two large oil companies. Details are noted on other pages. The railroads are still entirely out of the market so far as new cars are concerned.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.74c. to 2.84c.; plates and structural shapes, 2.84c.; bar iron, 2.74c.

Ferroalloys.—There is practically no demand for ferromanganese and the market is more inactive than in many weeks. Prices are unchanged at the new quotation of $117.50, seaboard, for the British alloy, and it is presumed that domestic makers would meet this price on any business offered. It is understood, however, that the new price has not yet been established by sales. There seems to be an entire lack of business or inquiry. In the spiegeleisen market the same condition prevails as in the ferromanganese. Prices, however, remain the same as for several weeks, or $45 for the 20 per cent alloy and $44, furnace, for the 19 per cent. Sales of 50 per cent ferrosilicon are also exceedingly light, although deliveries on contract are fairly heavy. New business is so small that it is difficult to ascertain the actual price level. Business is stated to have been done as low as $84, delivered. New business in the ferrochromium market is at unchanged prices.

Coke.—The coke market is slightly firmer. Standard foundry coke in prompt carloads is quotable at from $5.75 to $6.25 per ton and higher, with Keystone and similar high-grade brands at $7 on contracts in open cars and $7.25 delivered in box cars. Standard furnace coke is also firmer at $4.75 to $5.25 per ton. By-product coke is unchanged at $11.34 to $11.41 Newark and Jersey City points.

Old Material.—Weakness continues in most grades, and as a result of the difference in freight rates railroad quality being shipped to Bethlehem on a $2.65 rate compared with $3.78 to other eastern Pennsylvania consumers, the price, f.o.b. New York, is from $13 to $13.50 per ton for both No. 1 heavy melting steel and railroad or equivalent. A fair estimate of the market on forge fire is from $9.50 to $10 per ton, New York, one broker offering $13.25 per ton, delivered Phoenixville, Pa. Machine shop turnings and borings and turnings are active, but buying prices are low, turnings being quotable at $10.50 to $11 per ton, and borings and turnings at $9.50 to $10.50 per ton.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard	$13.00 to $13.50
Steel rails, short lengths, or equivalent	13.00 to 13.50
Rails for rolling	16.00 to 18.00
Relaying rails, nominal	25.00 to 26.00
Steel car axles	20.00 to 21.00
Iron car axles	25.00 to 26.00
No. 1 railroad wrought	16.50 to 17.00
Wrought iron track	15.50 to 16.00
Forge fire	9.50 to 10.00
No. 1 yard wrought, long	15.00 to 15.50
Cast borings (clean)	11.50 to 12.00
Machine-shop turnings	10.50 to 11.00
Mixed borings and turnings	9.50 to 10.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	10.75 to 11.25
Stove plate	12.75 to 13.75
Locomotive grate bars	13.00 to 13.50
Malleable cast (railroad)	18.00 to 19.00
Cast-iron car wheels	17.00 to 18.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$20.50 to $21.00
No. 1 heavy cast (columns, building materials, etc.) cupola size	19.50 to 20.00
No. 1 heavy cast, not cupola size	17.50 to 18.00
No. 2 cast (radiators, cast boilers, etc.)	15.50 to 16.00

Cincinnati

Pig Iron Prices Still Declining on Sales of Small Tonnages

CINCINNATI, July 17.—On small lot business, pig iron prices continue to decline, particularly on Northern irons. The market in southern Ohio has reached $26, Ironton, this price having been quoted on an inquiry for 3000 tons of malleable sent out by an Indiana melter. Whether this price can be shaded is problematical, but there are some in the trade who believe the market will reach $25 before there is an upturn. There is more strength comparatively to the Southern market, but $25, Birmingham, can still be done, and it is said that the higher silicons have been sold at this price. However, as yet no seller has gone below $25 for the base grade. The market was dull last week. A nearby melter bought 600 tons of Northern at $26.50, Ironton, and several hundred tons of high silicon Southern at $25.50, Birmingham, which figured back would mean approximately $24.50, base. Two sales to Michigan melters, 1000 and 700 tons respectively, of Northern iron were also made, at prices around $27, furnace. There is little new inquiry, and interest is centered on the two Indiana inquiries reported last week, and which will likely be closed this week. Two silvery furnaces in Jackson County have been banked, and one large foundry producer is reported to be preparing to bank within the next few days.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton, we quote f.ob. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$29.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	29.55
Ohio silvery, 8 per cent	40.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	28.27
Basic Northern	27.27
Malleable	28.27

Finished Material.—There seems to be an improved demand for specialties, such as bolts and nuts, track fastenings, frogs and switches, and such items, but in the heavier rolled products orders, while a little improved, are still comparatively light. The railroads have been good buyers in this district during the past week. A better demand for sheets is reported, and though mills are well sold up for full third quarter, they manage to take on a little extra tonnage from time to time as regular customers demand it. Inquiry is heavier for sheet steel, and mills are being pushed a little harder for deliveries, particularly those mills which show evidences of falling behind on shipments. There is little evidence of price cutting, and orders being placed are at the current schedules. On shapes and plates 2.50c., Pittsburgh, is the regular quotation, and on bars nothing under 2.40c. has been quoted, with small lots being booked at 2.45c. Sheet prices are firm, at 3.00c., 3.85c. and 5c. respectively for blue annealed, black and galvanized, and while reports are heard of shading of prices on automobile body sheets in the northern part of the State, mills in this section are holding firmly to the 5.35c. price. No hold-ups or cancellations for auto body stock are reported. Automobile lamp manufacturers have ordered more steel for July shipment than for any month to date this year. There is little activity in the building line that involves any considerable tonnages of structural shapes or reinforcing bars. Bids will close this week on several projects involving considerable tonnages, however, including railroad work, sheet steel piling, river boat work and office buildings. Most of these inquiries are from Southern States.

Warehouse Business.—There is still a fair demand for steel bars and small angles, and sheet demands are also fair. Nails are moving well, but wire products show evidences of slowing up. Prices are unchanged.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.50c.; cold-rolled flats, squares and hexagons, 5c.; No. 10 blue annealed sheets, 4.25c.; No. 28 black sheets, 5.35c.; No. 28 galvanized sheets, 6.35c.; No. 9 annealed wire, $3.60 per 100 lb.; common wire nails, $3.60 per keg base.

Coke.—There is practically no activity in the coke market and sales are confined to carload lots for spot shipment. Some sellers profess to see a strengthening of prices, as some producers of medium sulphur coke have advanced 50c. over last week's quotations on standard fuel.

O'd Material.—The scrap market is very quiet, and on offerings prices are off anywhere from 50c. to $1 per ton. Sales to consumers are negligible, one large dealer reporting that on Monday not a carload was sold in this territory by him. The Southern Railroad and the Norfolk & Western are offering fair-sized lists.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

	Per Gross Ton	
Bundled sheets	$12.50 to	$13.00
Iron rails	15.00 to	15.50
Relaying rails, 50 lb. and up	28.00 to	28.50
Rails for rolling	16.50 to	17.00
Heavy melting steel	15.00 to	15.50
Steel rails for melting	14.50 to	15.00
Car wheels	15.50 to	16.00
	Per Net Ton	
No. 1 railroad wrought	12.50 to	13.00
Cast borings	10.50 to	11.00
Steel turnings	9.00 to	9.50
Railroad cast	16.50 to	17.00
No. 1 machinery cast	20.00 to	20.50
Burnt scrap	12.00 to	12.50
Iron axles	22.50 to	23.00
Locomotive tires (smooth inside)	13.50 to	14.00
Pipes and flues	10.00 to	10.50

Birmingham

Furnaces Still Slow to Sell Pig Iron at $25—Merchant Stocks Low

BIRMINGHAM, ALA., July 17.—One Birmingham iron maker sold 40 tons last week. It was for local delivery and brought $27. Inquiry was almost nil. Alabama furnaces charging $27 have not attempted business in competitive fields. With freight added, the Birmingham price for Chicago delivered to compete with Northern iron would have to be $28, which would make the furnace price at Birmingham $22. Listlessness of the market is shown by the reported failure of entire booking of the 18,000 tons offered at $25 the past three weeks. The Alabama furnace position briefly is this: The makers have booked capacity for the third quarter and merchant iron stocks, although larger than on June 1, are less than 30,000 tons. The leading interest is practically out of the merchant iron business. The Alabama furnaces feel able to mark time a while longer waiting to see how the situation in competitive territory develops, meanwhile doing no new business and having no incentive to mark down through proffer of large tonnage. They do not try to read the future, contenting themselves with the immediate safety of the situation and waiting on developments. Labor is easier, the peak of emigration to the North having passed. There are no cancellations and little decrease in consumption, the soil pipe shops being the only field where real reduction has occurred. Outside of the Tennessee company's blowing out of the Oxmoor furnace, which was on foundry iron, there has been no decrease in iron production and none is on schedule. The future is undecipherable.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry, silicon 1.75 to 2.25	$25.00
Basic	26.00
Charcoal, warm blast	34.00

Cast Iron Pipe.—The American Cast Iron Pipe Co., has booked 207 tons for Columbus, Ga., 951 tons for Houston, Tex., 385 tons for Clawson, Mich., and 223 tons for Gates, Tex. The National Cast Iron Pipe Co. will be producing De Lavaud pipe with four machines in August and the United States Cast Iron Pipe & Foundry Co. will have five additional machines, nine in all, installed next month. The pressure pipe base remains at $49. Soil pipe is slow at $65.

Finishing Mills.—The Tennessee company remains on double turn in all finishing mills. Fabricating plants are busy. The Virginia Bridge & Iron Co. has booked underframes for 1,000 Southern railway cars and steel bridges in Walker and Marengo counties, Ala. The Nashville Bridge Co. has booked bridges for Redwater and Normanna, Tex., and Robertdale, La. Birmingham fabricators are now enjoying a $2.20 lower freight

charge from Pittsburgh on such steel as cannot be supplied locally. Steel bars are 2.65c. Birmingham. Wire mill orders come in slowly. Production is better owing to easier labor conditions. The Tennessee company is shipping 1500 tons of plates to Port Arthur via Mobile and ocean barges.

Coal and Coke.—Alabama's half year coal production ran to 9,400,000 tons, the largest in five years, and present production is slightly over normal for the season. Brokers report a good fall prospect. Coke ranges from $8 to $9.

Old Material.—The scrap market has marked lower prices. The outgo on old contracts is good, but new business is scarce.

We quote per gross ton f.o.b. Birmingham district yards, nominal prices, as follows:

Old steel rails	$16.00 to $18.00
No. 1 steel	14.00 to 16.00
No. 1 cast	20.00 to 21.00
Tram car wheeels	20.00 to 21.00
Car wheels	19.00 to 20.00
Stove plate	15.00 to 16.00
Machine shop turnings	10.00 to 12.00
Cast iron borings	10.00 to 12.00

St. Louis

Only One Pig Iron Inquiry of Size—Low Price Is Reported

ST. LOUIS, July 17.—Interest in the pig iron market centered the last week in the inquiry for 3000 tons of malleable of Northern make for the Link-Belt Co., Indianapolis, which had not been closed at the end of the week. It is learned that a price lower than $27, Chicago, had been quoted. There was a sale of 1000 tons of malleable of Northern make for third quarter delivery to a melter in the St. Louis territory. The St. Louis Coke & Iron Co. sold 200 tons of malleable to a Pacific Coast melter. An Evansville melter wants 200 tons of foundry iron for third quarter delivery, a Michigan melter wants 200 to 300 tons of 2.75 to 3.75 silicon Northern iron, and there are other inquiries for a carload or more. As a whole, melters are showing more interest in the market. The market is still weak, however, and further declines are expected. Southern iron is still at $25, Birmingham.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Birmingham (rail and water), $5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$30.16
Northern malleable, sil. 1.75 to 2.25	30.16
Basic	30.16
Southern fdy., sil. 1.75 to 2.25	30.17

Finished Iron and Steel.—The contract for 1000 tons of reinforcing bars for the Cahokia plant of the Union Electric Co. will be closed shortly. There is also an inquiry for 300 tons of billet reinforcing bars for the Santa Fe Building at Dallas, Tex. The St. Louis Terminal Railway Association bought 1000 tons of 100-lb. rails. Fabricators of structural material are still well supplied with orders, but no new inquiries of consequence are being received.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.45c.; No. 28 black sheets, cold rolled, one pass, 5.20c.; cold drawn rounds, shafting and screw stock, 4.45c.; structural rivets, 4.15c.; boiler rivets, 4.25c.; tank rivets, ⅞ in. and smaller, 50-5 per cent off list; machine bolts, 45-5 per cent; carriage bolts, 40-5 per cent; lag screws, 50-5 per cent; hot pressed nuts, square or hexagon blank, $2.50; and tapped, $2.50 off list.

Coke.—Foundry coke is in better demand for both spot shipments and on contracts. The price for Connellsville coke ranges from $6 to $7 at the furnace, according to the brand. A little interest is being shown in domestic coke for the coming season by dealers.

Old Material.—Buying of old material is still confined to dealers, who are making a few purchases of yard stock and to cover contracts in which there should be a short interest. Consumers are not buying, and may not do so until after Aug. 15. Railroad lists continue heavy, including Norfolk & Western 10,000 tons; Wabash, 3400 tons; Illinois Central, 1000 tons of rails; Rock Island, 3000 tons; Southern Railway subsidiary, 500 tons and Clover Leaf, 250 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$19.00 to $19.50
Rails for rolling	17.50 to 18.00
Steel rails less than 3 ft.	18.00 to 18.50
Relaying rails, 60 lb. and under	26.00 to 27.00
Relaying rails, 70 lb. and over	33.50 to 34.50
Cast iron car wheels	18.00 to 18.50
Heavy melting steel	16.50 to 17.00
Heavy shoveling steel	16.50 to 17.00
Frogs, switches and guards cut apart	16.50 to 17.00
Per Net Ton	
Heavy axles and tire turnings	12.75 to 13.25
Steel angle bars	15.25 to 15.75
Iron car axles	25.00 to 25.50
Steel car axles	19.00 to 19.50
Wrought iron bars and transoms	19.50 to 20.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	15.50 to 16.00
Railroad springs	19.00 to 19.50
Cast iron borings	12.50 to 13.00
No. 1 busheling	14.75 to 15.25
No. 1 railroad cast	17.50 to 18.00
No. 1 machinery cast	18.00 to 18.50
Railroad malleable	17.00 to 17.50
Machine shop turnings	11.50 to 12.00
Champion bundled sheets	9.00 to 9.50

Boston

Pennsylvania and Buffalo Furnaces Meeting Stiff Pig Iron Competition

BOSTON, July 17.—Sales of pig iron in this territory the past week did not exceed 4000 tons, 2000 of which is reported to have been bought by a heater manufacturer from five different furnaces. Tentative inquiries are increasing, however, including two 1000-tons lots, one from a Connecticut, and the other from a Springfield, Mass., foundry. Furnaces the past week made further price concessions, which had a tendency to hold buyers back. Eastern Pennsylvania and Buffalo furnaces are now having stiff competition from Northern iron due to decidedly advantageous freight rates on the latter. Eastern Pennsylvania No. 2X has sold at $30.15 delivered, and No. 2 plain at about 50c. a ton less, while $29.91 delivered has been accepted for both grades of Buffalo iron. No. 2 plain Northern iron has been offered at $29.15 delivered, the furnace price in this instance being $26. Firm offers of $24.50 on No. 2 plain Buffalo have been turned down, an indication that furnaces will endeavor to hold the market at $25. Western Pennsylvania iron, having the same freight rate as Buffalo presumably can be bought at $26, furnace base. Virginia iron is pegged at $27, furnace base, and nothing new has developed in Alabama prices. Furnaces are more discriminating in accepting fourth quarter business and furnace storage piles are beginning to increase.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama.

East Penn., sil. 2.25 to 2.75	$30.15 to $31.15
East. Penn., sil. 1.75 to 2.25	30.15 to 30.65
Buffalo, sil. 2.25 to 2.75	29.91 to 31.41
Buffalo, sil. 1.75 to 2.25	29.91 to 30.91
Virginia, sil. 2.25 to 2.75	33.42
Virginia, sil. 1.75 to 2.25	32.92
Alabama, sil. 2.25 to 2.75	35.10 to 37.10
Alabama, sil. 1.75 to 2.25	34.60 to 36.60

Coke.—New England foundries continue to store coke in increasing tonnages. In addition, oven interests in this territory are selling domestic coke freely, there being considerable congestion of orders on their books. Connellsville foundry fuel prices appear firmer, but foundries other than Connecticut show little interest. The position of New England foundry coke makers therefore was further strengthened the past week. Both the New England Coal & Coke Co. and the Providence Gas Co. continue to quote foundry coke on a basis of $13.50 delivered within New England.

Old Material.—The market is in the doldrums. Buying is largely confined to scattered lots of material by dealers for storage purposes, there not being enough activity to keep prices from constantly seeking new low levels. Practically all purchases of heavy melting

steel the past week were at $12.50 on cars, shipping point. Turning and boring values are decidedly soft, there being no market for such materials. Shafting and axle prices also are notably soft. Machinery cast is about 50c. a ton lower due to the weakness of pig iron prices rather than to any increased desire on the part of holders to sell.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$22.50 to $23.00
No. 2 machinery cast	20.50 to 21.00
Stove plate	11.00 to 12.00
Railroad malleable	24.00 to 24.50
Street car axles	21.00 to 21.50

The following prices are offered per gross ton lots f.o.b. Boston common rate shipping points:

No. 1 heavy melting steel	$12.00 to $13.00
No. 1 rail wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1-in. in diam., over 2 ft. long)	8.50 to 9.00
Machine shop turnings	9.00 to 9.50
Cast iron borings, rolling mill	11.00 to 11.50
Cast iron borings, chemical	12.50 to 13.00
Blast furnace borings and turnings	9.00 to 9.50
Forged scrap and bundled skeleton	10.00 to 10.50
Shafting	18.00 to 18.50
Street car axles	18.00 to 18.50
Rails for rerolling	13.00 to 13.50

Buffalo

Slight Improvement in Buying of Pig Iron at Low Prices

BUFFALO, July 17.—Buying of pig iron has improved slightly this week with a better line of inquiry. Furnaces have been making some adjustments on higher-priced contracts and considerable bargaining has taken place. Some selling has taken place on a $26 base with as low as $25 having been done. Total inquiry was about 12,000 tons with sales estimated almost as high. Malleable and foundry figured mainly in the selling with two or three sales of lots over 1000 tons.

We quote f.o.b. per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.	$26.00 to $27.00
No. 2X foundry, 2.25 to 2.75	25.50 to 26.50
No. 2 plain, 1.75 to 2.25 sil.	25.00 to 26.00
Basic	26.00 to 26.50
Malleable	26.00 to 26.50
Lake Superior charcoal	36.78

Finished Iron and Steel.—Some better inquiry is noted in bars, shapes and plates, with tonnage a little higher, but it has not yet developed into a real buying movement. Usual summer dullness, mills believe, will hold down the buying in heavy quantities for the next month to six weeks at least. Demand for wire products continues good with plentiful nail inquiry. A new hotel is to be constructed at Niagara Falls. It will require 1000 tons of structural steel. A new building for the General Electric Co. to be constructed near Buffalo will require a large tonnage, details of which are not yet available.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.45c.; galvanized steel sheets, No. 28 gage, 6.35c.; black sheets, No. 28 gage, 5.25c.; cold rolled round shafting, 4.70c.

Old Material.—The market continues to be very dull with no evidence yet of the expected buying movement. Mills whose operating schedules indicate heavy consumption of scrap material have been showing some interest in the market, but have not reached the point of actual buying. With the adjustment of the pig iron base to a new low level, prospects are that the price of heavy melting steel will be sent down, and there will be more of an inducement for mills to replenish stocks. The prices quoted are nominal.

We quote f.o.b. gross ton Buffalo as follows:

Heavy melting steel	$20.00 to $21.00
Low phos., 0.04 and under	24.00 to 25.00
No. 1 railroad wrought	17.00 to 18.00
Car wheels	17.50 to 18.50
Machine shop turnings	13.00 to 14.00
Cast iron borings	15.00 to 16.00
No. 1 busheling	17.50 to 18.50
Stove plate	17.50 to 18.00
Grate bars	17.00 to 17.50
Bundled sheet stampings	12.00 to 13.00
No. 1 machinery cast	20.00 to 21.00
Hydraulic compressed	17.00 to 18.00
Railroad malleable	21.00 to 22.00

Philadelphia

Production and Consumption About Equal—Pig Iron Prices Decline

PHILADELPHIA, July 17.—The fact that production and consumption continue well balanced on the whole in the iron and steel trade in this district is an encouraging sign to manufacturers. In some lines, however, there has developed an increase of shipments in excess of bookings, and this has given cause for greater caution in controlling output. The weakest spots in the market relate to pig iron and scrap. Drops in prices have occurred in both, while semi-finished and finished lines are maintaining previously established levels. The condition prevailing is attributed partially at least to seasonal dullness, though it is conceded that consumers are buying much less freely. Specifications against contracts are especially good in such products as structural material. It is hoped that the pause in buying will be only temporary, some producers predicting that it will give way within a month or so to a purchasing movement, as it is said that buyers have no stocks on hand. Fair-sized lots of foundry and basic iron have been sold, but the business was confined to only a few furnaces. Pig iron prices have declined from 50c. to $1 per ton. The scrap markets in most of the important grades have fallen from 50c. to $1.50 per ton.

Pig Iron.—Spotty conditions prevail in the market for pig iron in this district. No. 2 plain has declined $1 a ton and is now quoted at $26.76 to $27.56, delivered, while No. 1X has taken a similar downward movement and is quoted at $28.26 to $29.01, delivered, with a slightly less decline in No. 2X, now quoted at $27.56, delivered. The market has not become clearly defined. This is shown by the fact that some furnaces have taken only small lots at prices that vary somewhat, but at the same time good sized tonnages of foundry and basic iron have moved at the prices named. It is conceded that the quotations given might be shaded, however, on further attractive tonnages. Basic, declining 50c., is quoted at $26.50 to $27, delivered. Transactions in basic during the past week in this district aggregated from 2500 to 3000 tons, of which 500 tons went to the Penn Seaboard Steel Corporation, while sales of all grades of foundry iron have involved about a similar tonnage. No blast furnaces are reported to have been banked, though there is talk that this may be resorted to in the near future unless increased business comes out. Foreign iron is coming into this district in only limited quantities, and included 750 tons from Germany the past week. Prices of foreign iron also have declined from 50c. to $1 per ton.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to $1.64 per gross ton:

East Pa. No. 2 plain, 1.75 to 2.25 sil.	$26.76 to $27.56
East Pa. No. 2X, 2.25 to 2.75 sil.	27.56 to 28.26
East. Pa. No. 1X	28.26 to 29.01
Virginia No. 2 plain, 1.75 to 2.25 sil.	32.17 to 32.67
Virginia No. 2X, 2.25 to 2.75 sil.	32.67 to 33.17
Basic delivered eastern Pa.	26.50 to 27.00
Gray forge	27.00 to 27.50
Malleable	30.14 to 30.64
Standard low phos. (f.o.b. furnace)	30.00 to 35.00
Copper bearing low phos. (f.o.b. furnace)	32.00

Foreign Pig Iron

All prices f.o.b. cars Philadelphia, duty paid.

Continental foundry, 1.80 to 2.50 sil.	$26.50
Continental foundry, 2.50 to 3.25 sil.	27.50
Low phos. copper free, guar. not over 0.035 per cent phos.	34.00
Continental, phos. 1.50; sil. 2 to 3	26.50

Ferroalloys.—Sales of ferromanganese are extremely limited and involve only small lots, offerings being in excess of demand. The market is unchanged at $117.50, Atlantic seaboard, for both domestic and foreign material. Imports of ferromanganese the past week to this district totaled 750 tons, all of which came from England.

Semi-Finished Steel.—The market for billets is un-

changed from last week at $42.50, Pittsburgh, for re-rolling quality, and $47.50 to $50 for forging billets.

Plates.—Inquiry for plates has improved somewhat the past week. The Philadelphia & Reading Railroad will open bids tomorrow for 800 tons of car plates. One prominent producer is making shipments in four to six weeks, but others give shorter delivery. Inability to make earlier delivery is reported to have caused the loss of business to some requiring the longer period. Mills are operating at 85 to 90 per cent of capacity and some of them report a shortage of labor, precluding heavier production. This rate of output is due largely to specifications from locomotive and car shops against business closed several months ago rather than to new business. Plates are firm at 2.50c., base, Pittsburgh, while the maximum quotation of 2.60c. has not disappeared.

Structural Steel.—Increased demand has developed in the market for structural material, but involves small quantities. The price is firm at 2.50c., base, Pittsburgh. For the most part, mills are fairly well booked, though some are anxious to take on new tonnage.

Bolts, Nuts and Rivets.—Conditions in the market for bolts, nuts and rivets continue to be quiet, with prices unchanged.

Warehouse Business.—No change has been made the past week in prices for steel out of stock.

Soft steel bars and small shapes, 3.55c.; iron bars (except bands), 3.55c.; round edge iron, 3.75c.; round edge steel, iron finished, 1½ x ½ in., 3.75c.; round edge steel planished, 4.55c.; tank steel plates, ¼ in. and heavier, 3.65c.; tank steel plates, ⅛ in., 3.95c.; blue annealed steel sheets, No. 10 gage, 4.25c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.65c.; structural shapes, 3.65c.; diamond pattern plates, ¼-in., 5.40c.; ⅜-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.75c.; narrower than 1 in., all gages, 5.25c.; steel bands, No. 12 gage to ⅜-in., inclusive, 4.35c.; rails, 3.55c.; tool steel, 8.50c.; Norway iron, 7c.

Ore.—Receipts of iron ore the past week aggregated 47,175 tons, as follows: Sweden, 26,375 tons; Cuba, 12,400 tons; St. Johns, Newfoundland, 8400 tons. Manganese ore receipts included 4550 tons from Turkey, 1100 tons from Calcutta, India, and chrome ore receipts were 2000 tons, coming from Portuguese Africa.

Old Material.—Weakening further under lack of demand, scrap prices have declined from 50c. to $1.50 per ton, involving practically all of the leading grades. Heavy melting steel has declined 50c. to a range of $16.50 to $17.50. Low phosphorus scrap has dropped $1.50 and is quoted at $21.50 to $22.50, a fair sized lot having been sold at the former figure. A large tonnage of mixed borings for blast furnace use was sold at $13, and it is reported that this grade of old material might be bought for 50c. less. Machine shop turnings were sold at $14. No immediate signs of improvement in the scrap market are apparent. Luria Bros. have purchased approximately 3000 tons of wrought iron structural material recovered from the destroyed Broad Street shed of the Pennsylvania Railroad.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$16.50 to $17.50
Scrap rails	16.50 to 17.50
Steel rails for rolling	19.00 to 20.00
No. 1 low phos., heavy 0.04 and under	21.50 to 22.50
Cast iron car wheels	20.00 to 21.00
No. 1 railroad wrought	18.00 to 19.00
No. 1 yard wrought	17.00 to 18.00
No. 1 forge fire	15.50 to 16.00
Bundled sheets (for steel works)	14.00 to 14.50
No. 1 busheling	16.50 to 17.50
Mixed borings and turnings (for blast furnace use)	12.50 to 13.50
Machine shop turnings (for steel works use)	14.00 to 14.50
Machine shop turnings (for rolling mill use)	14.50 to 15.00
Heavy axle turnings (or equivalent)	16.00 to 16.50
Cast borings (for steel works and rolling mills)	15.00 to 15.50
Cast borings (for chemical plants)	18.00 to 19.00
No. 1 cast	20.50 to 21.50
Heavy breakable cast (for steel plants)	18.00 to 18.50
Railroad grate bars	17.00 to 18.00
Stove plate (for steel plant use)	16.50 to 17.00
Railroad malleable	19.00 to 20.00
Wrought iron and soft steel pipes and tubes (new specifications)	15.50 to 16.00
Shafting	22.00 to 24.00
Steel axles	24.00 to 26.00

Cleveland

Pig Iron Prices Lower—Heavy Ore Shipments—Scrap Marked Down

CLEVELAND, July 17.—With a good car supply at lower lake ports, ore is moving in heavy volume and July shipments are expected to exceed 10,000,000 tons. No sales are reported.

Pig Iron.—Prices have further declined in a market that is so dull that it is impossible to definitely establish quotations. However, the situation continues very weak in all Central Western districts. In the Mahoning Valley district, foundry grades are now quoted at $25 to $26 and there are unconfirmed reports of quotations lower than $25. Steel makers appear to be leading in price reductions. In Southern Ohio the market is nominally at $26, but admittedly weak. Buffalo foundry iron is being offered at $25 and there are unconfirmed reports from New England indicating that this grade is being offered at $24 probably by Buffalo furnaces. Locally the general asking price is $27 and some small lot sales for local delivery are reported at this price. However, Cleveland furnaces will have to reduce their quotations to keep out competition of Valley furnaces, naming prices below $25.75. A local producer quoted a price equivalent to $25.67 on the inquiry for 3000 tons of malleable for Indianapolis, from the Link Belt Co. which evidently has not yet bought its iron. In spite of the general weakness, two lake furnaces that are well filled with orders are still holding close to their recent prices and report a few small lot sales at $28.50 and $29. Inquiry continues light and is mostly for small lots for early shipment. The Westinghouse Electric & Mfg. Co. is inquiring for 800 tons of foundry iron for its Trafford City, Pa., plant and the General Electric Co. has an inquiry out for 100 tons of low phosphorus malleable iron for its Erie works. We note the sale of two car lots of high silicon Bessemer iron by a Valley furnace at $28, this usually commanding $2 a ton above standard Bessemer iron. Low phosphorus iron is weak at about $1 lower. Alabama foundry iron is being freely offered at $25. Fannie furnace of the M. A. Hanna Co., West Middlesex, Pa., which has been kept in blast until its entire ore supply could be used up, will go out this week.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$25.00
Northern No. 2 fdy., sil. 1.75 to 2.25	$27.00 to 27.50
Southern fdy., sil. 1.75 to 2.25	31.00
Malleable	27.00 to 27.50
Ohio silvery, 8 per cent	41.52
Standard low phos., Valley furnace	33.00 to 34.00

Coke.—The coke market is dull and prices, while not firm, show little change. Standard Connellsville foundry coke is quoted at $5.50 to $6.50 and some makers of the better grades are getting $6.50 to $7 for prompt shipment or contracts.

Reinforcing Bars.—The market on rail steel bars continues irregularly with 2.35c. the common quotation, but with some mills going to 2.30c. or lower. The Moses Cleaveland School, Cleveland, requiring 200 tons, has been placed with Republic Structural Iron Works, and 300 tons for the Cleveland Library has been taken by the Concrete Reinforcing Engineering Co. T. E. McShaffrey has been awarded the general contract for the State Street viaduct, Akron, requiring 300 tons. The Hunkin Conkey Construction Co. has been awarded the general contract for the Jamestown Hotel, Jamestown, N. Y., requiring 700 tons.

Finished Iron and Steel.—Mills are getting a fair volume of specifications on contracts, but new business is light and confined to small lots. While there have been some suspensions of deliveries, these do not involve large tonnages. Most of the suspensions have been on hot-rolled strip steel contracts by makers of cold-rolled strip steel whose business has fallen off

somewhat owing to easing in the automobile field. On the other hand, some consumers are crowding mills for shipments. Some buyers are trying to bring out lower prices than regular quotations and while there are rumors of shading, these appear to be without foundation in respect to steel bars, plates and structural material, on which the market is firm. The only weakness seems to be in hot-rolled strip steel, quotations of 2.75c. to 2.90c. being reported on bands. It is understood that one of the pending inquiries for lake boats is from the Ford Motor Co. for two large freighters, each requiring 5000 tons of steel for carrying ore to its River Rouge plant. The Pere Marquette Railroad, which recently asked for prices on two car ferries requiring 5200 tons of plates, has rejected all quotations and will take new bids this week. An Ohio fabricator is figuring on Great Northern Railroad bridge work requiring 2400 tons of structural material. Local plate mills report a fair volume of small orders. While 2.50c. is the common price for tank plates, mills are still getting 2.60c. for boiler plates. Several independent mills placed the new bar card of extras in effect July 16.

Sheets.—A number of mills are looking for orders for black sheets and some are still quoting 3.75c. on this grade. Other grades are holding firm at regular prices. One Valley district mill that has been holding to 3.25c. for light-gage blue annealed sheets is now quoting 3c. for all gages. New business is light and some consumers are not specifying full quotas on their contracts.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 9 galvanized wire, 3.70c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4.65c.; No. 28 galvanized sheets, 5.80c.; No. 10 blue annealed sheets, 3.75c. to 4.06c.; cold rolled rounds, 3.90c.; flats, squares and hexagons 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.60c.

Semi-Finished Steel.—The market is inactive on all grades and there has been no recent test of prices. Mills continue to hold to $42.50 for sheet bars, billets and slabs.

Bolts, Nuts and Rivets.—Bolt and nut manufacturers are now generally quoting an additional discount of 10 per cent, making 50, 10 and 10 per cent off list as the prevailing price for large machine bolts. However, the market lacks firmness and there are reports of quotations below that named above. Specifications are fairly heavy, but new business is light. Recent shading of rivet prices has been sufficient to establish prices at a spread with the minimum quotations $2 lower, making ruling prices 2.15c. to 2.25c. for structural and 2.25c. to 3.25c. for boiler rivets.

Old Material.—Prices on most grades except heavy melting steel have declined 50c. to $1 or more a ton. Machine shop turnings are particularly weak, owing to a large production and absence of demand coupled with the fact that some consumers are holding up shipments. Heavy melting steel is unchanged but the recent decline on this material was greater than on most other grades. Busheling has declined $2 a ton and cast scrap has been marked down another $1 a ton. The market continues inactive on all grades. Sales to consumers are confined to small lots that dealers are compelled to move and on which they name attractive prices. A local consumer has been sounding the market on heavy melting steel and would probably pay $16 to $16.50 delivered for this grade.

We quote dealers prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$16.00 to $16.50
Rails for rolling	18.50 to 19.00
Rails under 3-ft	18.00 to 18.50
Low phosphorus melting	18.50 to 19.00
Cast borings	12.50 to 12.75
Machine shop turnings	11.00 to 11.25
Mixed borings and short turnings	11.50 to 12.00
Compressed sheet steel	14.00 to 14.50
Railroad wrought	12.25 to 12.75
Railroad malleable	22.00 to 23.00
Light bundle sheet stampings	10.00 to 10.50
Steel axle turnings	15.00 to 15.50
No. 1 cast	19.00 to 20.00
No. 1 busheling	10.00 to 11.00
Drop forge flashings	10.50 to 11.00
Railroad grate bars	12.50 to 13.00
Stove plate	13.00 to 13.50
Pipes and flues	9.00 to 9.50

San Francisco

Very Little Activity in Iron and Steel, with Prices Softening

SAN FRANCISCO, July 10.—Business is quiet and there is an undercurrent of feeling that this condition will prevail for some weeks and possibly longer, but whether it is merely due to the usual relaxation of the summer period or to some basic causes not clearly defined, is a question not easily answered at this time. As far as the iron and steel business is concerned, there is very little activity with prices a shade easier, for this section of the State and about steady for Los Angeles and adjacent counties. This is regarded here as a temporary condition that will be equalized before the close of the year.

Pig Iron.—Trading is of a routine character and mostly confined to small lots, the larger consumers being fairly well supplied and the smaller establishments taking just enough to satisfy immediate needs and apparently giving no attention to the future. They say they are justified in this position by market conditions in the Eastern States and also in England where prices have been reduced with every prospect for further declines on round lots for early shipment. Local importers say there is a slight increase in the inquiries for English, Scotch and Chinese iron, but as far as learned the resulting volume of business has been small and unimportant. Prices at present range from $35.50 to $37 per ton, duty paid, on foreign iron. It is stated by those in close touch with the market that some change in prices is imminent, but while there are some strengthening tendencies, there is doubt as to whether prices will be advanced. There has been considerable talk about getting iron in quantity from China, but if this traffic is to assume large proportions, some radical changes in freight costs will be necessary. Pig iron can now be brought from England more cheaply than from China. This is possible because of the fact that carriers can bring iron here from England and the continent with a certainty of an immediate return cargo whereas that would be very uncertain as to China.

Coke.—There is practically no activity in this line and there are no quotable figures. All sales here are being made f.o.b. shipping point, so all interested parties can easily determine the cost laid down here by keeping posted on prices at Eastern and English shipping ports. Among the largest consumers here are the railroad companies whose requirements average about 1500 tons per month, but that business is all covered by contract and what they buy in the local markets is not important in volume. The other consumers are well supplied for the present and are not in the market.

Old Material.—Neither sellers nor consumers show much interest in the market for scrap. The falling off in business in finished products has had a softening effect on old material, but prices are fairly well sustained, the present range being about $15 to $15.50 per gross ton. Dealers say there is considerable hesitancy on the part of consumers and what might be called steady figures apply only to the best grades, that is, cut to lengths. A few sales of borings and turnings have been effected but the quantity has been small. Unprepared scrap, or a general mixture, is very slow to sell and it is reported that in some small trading, the asking figures were shaded fractionally. It seems to be a period of expectancy on the part of consumers, the hope being that prices will weaken in the near future. While present available quantities are sufficient to go around, there is no oversupply. Some tonnage is due by sea but the quantity is not believed to be very considerable.

Net earnings of the Trumbull Steel Co., Warren, for the second quarter, applicable to surplus, are placed at $1,272,000 and $2,000,000 for the first six months. Net for the first half is therefore equivalent to $3.50 per share of common stock outstanding. Net the first quarter was reported at $750,000. The company's favorable earning position is attributed in part to advanced price of tin plate the second quarter.

changed from last week at $42.50, Pittsburgh, for rerolling quality, and $47.50 to $50 for forging billets.

Plates.—Inquiry for plates has improved somewhat the past week. The Philadelphia & Reading Railroad will open bids tomorrow for 800 tons of car plates. One prominent producer is making shipments in four to six weeks, but others give shorter delivery. Inability to make earlier delivery is reported to have caused the loss of business to some requiring the longer period. Mills are operating at 85 to 90 per cent of capacity and some of them report a shortage of labor, precluding heavier production. This rate of output is due largely to specifications from locomotive and car shops against business closed several months ago rather than to new business. Plates are firm at 2.50c., base, Pittsburgh, while the maximum quotation of 2.60c. has not disappeared.

Structural Steel.—Increased demand has developed in the market for structural material, but involves small quantities. The price is firm at 2.50c., base, Pittsburgh. For the most part, mills are fairly well booked, though some are anxious to take on new tonnage.

Bolts, Nuts and Rivets.—Conditions in the market for bolts, nuts and rivets continue to be quiet, with prices unchanged.

Warehouse Business.—No change has been made the past week in prices for steel out of stock.

Soft steel bars and small shapes, 3.55c.; iron bars (except bands), 3.55c.; round edge iron, 3.75c.; round edge steel, iron finished, 1½ x ½ in., 3.75c.; round edge steel planished, 4.55c.; tank steel plates, ¼ in. and heavier, 3.65c.; tank steel plates, ⅜ in., 3.95c.; blue annealed steel sheets, No. 10 gage, 4.25c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.65c.; structural shapes, 3.65c.; diamond pattern plates, ¼-in., 5.40c.; ⅜-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.75c.; narrower than 1 in., all gages, 5.25c.; steel bands, No. 12 gage to ⅜-in., inclusive, 4.35c.; rails, 3.55c.; tool steel, 8.50c.; Norway iron, 7c.

Ore.—Receipts of iron ore the past week aggregated 47,175 tons, as follows: Sweden, 26,375 tons; Cuba, 12,400 tons; St. Johns, Newfoundland, 8400 tons. Manganese ore receipts included 4550 tons from Turkey, 1100 tons from Calcutta, India, and chrome ore receipts were 2000 tons, coming from Portuguese Africa.

Old Material.—Weakening further under lack of demand, scrap prices have declined from 50c. to $1.50 per ton, involving practically all of the leading grades. Heavy melting steel has declined 50c. to a range of $16.50 to $17.50. Low phosphorus scrap has dropped $1.50 and is quoted at $21.50 to $22.50, a fair sized lot having been sold at the former figure. A large tonnage of mixed borings for blast furnace use was sold at $13, and it is reported that this grade of old material might be bought for 50c. less. Machine shop turnings were sold at $14. No immediate signs of improvement in the scrap market are apparent. Luria Bros. have purchased approximately 3000 tons of wrought iron structural material recovered from the destroyed Broad Street shed of the Pennsylvania Railroad.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$16.50 to $17.50
Scrap rails	16.50 to 17.50
Steel rails for rolling	19.00 to 20.00
No. 1 low phos., heavy 0.04 and under	21.50 to 22.50
Cast iron car wheels	20.00 to 21.00
No. 1 railroad wrought	18.00 to 19.00
No. 1 yard wrought	17.00 to 18.00
No. 1 forge fire	15.50 to 16.00
Bundled sheets (for steel works)	14.00 to 14.50
No. 1 busheling	16.50 to 17.50
Mixed borings and turnings (for blast furnace use)	12.50 to 13.50
Machine shop turnings (for steel works use)	14.00 to 14.50
Machine shop turnings (for rolling mill use)	14.50 to 15.00
Heavy axle turnings (or equivalent)	16.00 to 16.50
Cast borings (for steel works and rolling mills)	15.00 to 15.50
Cast borings (for chemical plants)	18.00 to 19.00
No. 1 cast	20.50 to 21.50
Heavy breakable cast (for steel plants)	18.00 to 18.50
Railroad grate bars	17.00 to 18.00
Stove plate (for steel plant use)	16.50 to 17.00
Railroad malleable	19.00 to 20.00
Wrought iron and soft steel pipes and tubes (new specifications)	15.50 to 16.00
Shafting	22.00 to 24.00
Steel axles	24.00 to 26.00

Cleveland

Pig Iron Prices Lower—Heavy Ore Shipments—Scrap Marked Down

CLEVELAND, July 17.—With a good car supply at lower lake ports, ore is moving in heavy volume and July shipments are expected to exceed 10,000,000 tons. No sales are reported.

Pig Iron.—Prices have further declined in a market that is so dull that it is impossible to definitely establish quotations. However, the situation continues very weak in all Central Western districts. In the Mahoning Valley district, foundry grades are now quoted at $25 to $26 and there are unconfirmed reports of quotations lower than $25. Steel makers appear to be leading in price reductions. In Southern Ohio the market is nominally at $26, but admittedly weak. Buffalo foundry iron is being offered at $25 and there are unconfirmed reports from New England indicating that this grade is being offered at $24 probably by Buffalo furnaces. Locally the general asking price is $27 and some small lot sales for local delivery are reported at this price. However, Cleveland furnaces will have to reduce their quotations to keep out competition of Valley furnaces, naming prices below $25.75. A local producer quoted a price equivalent to $25.67 on the inquiry for 3000 tons of malleable for Indianapolis, from the Link Belt Co. which evidently has not yet bought its iron. In spite of the general weakness, two lake furnaces that are well filled with orders are still holding close to their recent prices and report a few small lot sales at $28.50 and $29. Inquiry continues light and is mostly for small lots for early shipment. The Westinghouse Electric & Mfg. Co. is inquiring for 800 tons of foundry iron for its Trafford City, Pa., plant and the General Electric Co. has an inquiry out for 100 tons of low phosphorus malleable iron for its Erie works. We note the sale of two car lots of high silicon Bessemer iron by a Valley furnace at $28, this usually commanding $2 a ton above standard Bessemer iron. Low phosphorus iron is weak at about $1 lower. Alabama foundry iron is being freely offered at $25. Fannie furnace of the M. A. Hanna Co., West Middlesex, Pa., which has been kept in blast until its entire ore supply could be used up, will go out this week.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$25.00
Northern No. 2 fdy., sil. 1.75 to 2.25	$27.00 to 27.50
Southern fdy., sil. 1.75 to 2.25	31.00
Malleable	27.00 to 27.50
Ohio silvery, 8 per cent	41.52
Standard low phos., Valley furnace	33.00 to 34.00

Coke.—The coke market is dull and prices, while not firm, show little change. Standard Connellsville foundry coke is quoted at $5.50 to $6.50 and some makers of the better grades are getting $6.50 to $7 for prompt shipment or contracts.

Reinforcing Bars.—The market on rail steel bars continues irregularly with 2.35c. the common quotation, but with some mills going to 2.30c. or lower. The Moses Cleaveland School, Cleveland, requiring 200 tons, has been placed with Republic Structural Iron Works, and 300 tons for the Cleveland Library has been taken by the Concrete Reinforcing Engineering Co. T. E. McShaffrey has been awarded the general contract for the State Street viaduct, Akron, requiring 300 tons. The Hunkin Conkey Construction Co. has been awarded the general contract for the Jamestown Hotel, Jamestown, N. Y., requiring 700 tons.

Finished Iron and Steel.—Mills are getting a fair volume of specifications on contracts, but new business is light and confined to small lots. While there have been some suspensions of deliveries, these do not involve large tonnages. Most of the suspensions have been on hot-rolled strip steel contracts by makers of cold-rolled strip steel whose business has fallen off

somewhat owing to easing in the automobile field. On the other hand, some consumers are crowding mills for shipments. Some buyers are trying to bring out lower prices than regular quotations and while there are rumors of shading, these appear to be without foundation in respect to steel bars, plates and structural material, on which the market is firm. The only weakness seems to be in hot-rolled strip steel, quotations of 2.75c. to 2.90c. being reported on bands. It is understood that one of the pending inquiries for lake boats is from the Ford Motor Co. for two large freighters, each requiring 5000 tons of steel for carrying ore to its River Rouge plant. The Pere Marquette Railroad, which recently asked for prices on two car ferries requiring 5200 tons of plates, has rejected all quotations and will take new bids this week. An Ohio fabricator is figuring on Great Northern Railroad bridge work requiring 2400 tons of structural material. Local plate mills report a fair volume of small orders. While 2.50c. is the common price for tank plates, mills are still getting 2.60c. for boiler plates. Several independent mills placed the new bar card of extras in effect July 16.

Sheets.—A number of mills are looking for orders for black sheets and some are still quoting 3.75c. on this grade. Other grades are holding firm at regular prices. One Valley district mill that has been holding to 3.25c. for light-gage blue annealed sheets is now quoting 3c. for all gages. New business is light and some consumers are not specifying full quotas on their contracts.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 9 galvanized wire, 3.70c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4.65c.; No. 28 galvanized sheets, 5.80c.; No. 10 blue annealed sheets, 3.75c. to 4.06c.; cold rolled rounds, 3.90c.; flats, squares and hexagons 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.60c.

Semi-Finished Steel.—The market is inactive on all grades and there has been no recent test of prices. Mills continue to hold to $42.50 for sheet bars, billets and slabs.

Bolts, Nuts and Rivets.—Bolt and nut manufacturers are now generally quoting an additional discount of 10 per cent, making 50, 10 and 10 per cent off list as the prevailing price for large machine bolts. However, the market lacks firmness and there are reports of quotations below that named above. Specifications are fairly heavy, but new business is light. Recent shading of rivet prices has been sufficient to establish prices at a spread with the minimum quotations $2 lower, making ruling prices 2.15c. to 2.25c. for structural and 2.25c. to 3.25c. for boiler rivets.

Old Material.—Prices on most grades except heavy melting steel have declined 50c. to $1 or more a ton. Machine shop turnings are particularly weak, owing to a large production and absence of demand coupled with the fact that some consumers are holding up shipments. Heavy melting steel is unchanged but the recent decline on this material was greater than on most other grades. Busheling has declined $2 a ton and cast scrap has been marked down another $1 a ton. The market continues inactive on all grades. Sales to consumers are confined to small lots that dealers are compelled to move and on which they name attractive prices. A local consumer has been sounding the market on heavy melting steel and would probably pay $16 to $16.50 delivered for this grade.

We quote dealers prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$16.00 to $16.50
Rails for rolling	18.50 to 19.00
Rails under 3-ft	18.00 to 18.50
Low phosphorus melting	18.50 to 19.00
Cast borings	12.50 to 12.75
Machine shop turnings	11.00 to 11.25
Mixed borings and short turnings	11.50 to 12.00
Compressed sheet steel	14.00 to 14.50
Railroad wrought	12.25 to 12.75
Railroad malleable	22.00 to 23.00
Light bundle sheet stampings	10.00 to 10.50
Steel axle turnings	15.00 to 15.50
No. 1 cast	19.00 to 20.00
No. 1 busheling	10.00 to 11.00
Drop forge flashings	10.50 to 11.00
Railroad grate bars	12.50 to 13.00
Stove plate	13.00 to 13.50
Pipes and flues	9.00 to 9.50

San Francisco

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Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....2.50c.

Structural Material

Beams, channels, etc., base, per lb.....2.50c.
Sheet piling .....2.65c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.40c.
Soft steel bars for cold finishing.....$3 per ton over base
Reinforcing steel bars, base.....2.40c.
Refined iron bars, base, per lb.....3.25c.
Double refined iron bars, base, per lb.....4.85c. to 5.00c.
Stay bolt iron bars, base, per lb.....8.00c. to 8.50c.

Hot-Rolled Flats

Hoops, ordinary gages and widths, base, per lb. 3.15c. to 3.30c.
Hoops, light gage, under 1 in. wide.....3.30c. to 3.50c.
Bands, base, per lb.....3.15c. to 3.30c.
Strips, base, per lb.....3.00c. to 3.30c.
Cotton ties, per bundle of 45 lb.....$1.61

Cold-Finished Steels

Bars and shafting base, per lb.....3.25c.
Strips, base, per lb.....5.00c. to 5.25c.

Wire Products

Nails, base, per keg.....$3.00
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in..... 2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.75
Annealed fence wire, base, per 100 lb..... 2.90
Spring wire, base, per 100 lb..... 3.70
Galvanized wire, No. 9, base, per 100 lb..... 3.35
Galvanized barbed, base, per 100 lb..... 3.80
Galvanized staples, base, per keg..... 3.80
Painted barbed wire, base, per 100 lb..... 3.45
Polished staples, base, per keg..... 3.45
Cement coated nails, base, per count keg..... 2.70
Woven fence, carloads (to jobbers)....67½ per cent off list
Woven fence, carloads (to retailers).....65 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads..60 and 10 per cent off list
Machine bolts, small, cut threads..50, 10 and 10 per cent off list
Machine bolts, larger and longer..50, 10 and 10 per cent off list
Carriage bolts, ⅝ x 6 in.:
Smaller and shorter, rolled threads
50, 10 and 10 per cent off list
Cut threads .....50 and 10 per cent off list
Larger and longer .....50 and 10 per cent off list
Lag bolts .....60 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list
Other style heads .....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in.
45 and 10 per cent off list
Larger and longer sizes .....45 and 10 per cent off list
Hot pressed square or hex. nuts, blank.....3.75c. off list
Hot pressed nuts, tapped.....3.75c. off list
C.p.c. and t. square or hex. nuts, blank.....3.75c. off list
C.p.c. and t. square or hex. nuts, tapped.....3.75c. off list
Semi-finished hex. nuts:
⅞ in. and smaller, U. S. S.....80 per cent off list
¾ in. and larger, U. S. S.....75 per cent off list
Small sizes, S. A. E.....80 and 5 per cent off list
S. A. E., ⅝ in. and larger.....75 and 5 per cent off list
Stove bolts in packages.....75, 10 and 5 per cent off list
Stove bolts in bulk.....75, 10, 5 and 2½ per cent off list
Tire bolts .....50, 10 and 10 per cent off list
Bolt ends with hot pressed nuts..50, 10 and 10 per cent off list
Turnbuckles, with ends, ½ in. and smaller
55 and 5 to 50 per cent off list
Turnbuckles, without ends, ½ in. and smaller
70 and 10 to 65 and 5 per cent off list
Washers .....5c. to 5.25c. off list

Cap and Set Screws

Milled square and hex. head cap screws,
65 and 10 per cent off list
Milled set screws .....65 and 10 per cent off list
Upset cap screws .....75 per cent off list
Upset set screws .....75 per cent off list
Milled studs .....50 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb. $3.15 to $3.25
Large boiler rivets, base, per 100 lb..... 3.25 to 3.35
Small rivets .....65 and 5 to 60 and 10 off list

Track Equipment

Spikes, ⅜ in. and larger, base, per 100 lb..... $3.15
Spikes, ½ in., ⅝ in. and ¾ in., per 100 lb.....$3.50 to 3.75
Spikes, ⅞ in..... 3.50 to 3.75
Spikes, boat and barge, base, per 100 lb..... 3.50 to 3.75
Track bolts, ¾ in. and larger, base, per 100 lb.. 4.00 to 4.25
Track bolts, ½ in. and ⅝ in., base, per 100 lb.. 5.00 to 5.50
Tie plates, per 100 lb..... 2.55 to 2.60
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜ ....+11		+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6.....	28	13
9 and 10....	54	41½	7 to 12.....	26	11
11 and 12....	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3.....	61	50½
¼ to ⅜....	47	30½	¼ to ⅜.....+19		+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½.....	60	49½	1 to 1½.....	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4....	57	46½	2½ to 4.....	29	15
4½ to 6....	56	45½	4½ to 6.....	28	14
7 to 8.....	52	39½	7 to 8.....	21	7
9 and 10....	45	32½	9 to 12.....	16	2
11 and 12...	44	31½			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent, on galvanized.

Boiler Tubes

Lap Welded Steel		*Charcoal Iron*	
2 to 2¼ in.....	27	1½ in. .....+18	
2½ to 2¾ in.....	37	1¾ to 1⅞ in.....+ 8	
3 in.	40	2 to 2¼ in.....— 2	
3¼ to 3¾ in.....	42½	2½ to 3 in.....— 7	
4 to 13 in.....	46	3¼ to 4½ in.....— 9	

Less carload lots 4 points less.

Standard Commercial Seamless Boiler Tubes

Cold Drawn			
1 in.	55	3 and 3¼ in.....	36
1¼ and 1½ in.....	47	3½ and 3¾ in.....	37
1¾ in.	31	4 in.	41
2 and 2¼ in.....	22	4½ in. and 5 in.....	33
2½ and 2¾ in.....	32		
Hot Rolled			
3 and 3¼ in.....	38	4 in.	43
3½ in. and 3¾ in....	39		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....83 per cent off list
Carbon 0.30 to 0.40, base.....81 per cent off list

Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage....	15	2¼-in. O.D. 10 gage..	20
2-in. O.D. 11 gage....	16	3-in. O.D. 7 gage....	35
2-in. O.D. 10 gage....	17	1½-in. O.D. 9 gage..	15
2¼-in. O.D. 12 gage..	17	5⅝-in. O.D. 9 gage..	55
2¼-in. O.D. 11 gage..	18	5½-in. O.D. 9 gage..	57

Tin Plate

Standard cokes, per base box.....$5.50

Terne Plate

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base $11.00		20-lb. coating I. C....$14.90	
8-lb. coating I. C....	11.30	25-lb. coating I. C....	16.20
12-lb. coating I. C....	12.70	30-lb. coating I. C....	17.35
15-lb. coating I. C....	13.95	35-lb. coating I. C....	18.35
		40-lb. coating I. C....	19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....3.00c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.85c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb....5.35c.

Galvanized

No. 28 (base), per lb.....5.00c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....5.30c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.85c.

Manufacturers have pamphlets, which can be had upon application, giving price differentials for gage and extras for length, width, shearing, etc.

Freight Rates

All freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic.	$0.32	Buffalo	$0.265	St. Louis	$0.43
Philadelphia, export...	0.235	Cleveland	0.215	Kansas City	0.735
Baltimore, domestic...	0.31	Cleveland, Youngstown		Kansas City (pipe)...	0.705
Baltimore, export.....	0.225	Comb.	0.19	St. Paul	0.60
New York, domestic...	0.34	Detroit	0.29	Omaha	0.735
New York, export.....	0.255	Cincinnati	0.29	Omaha (pipe)	0.705
Boston, domestic.....	0.365	Indianapolis	0.31	Denver	1.27
Boston, export.....	0.255	Chicago	0.34	Denver (pipe).....	1.215

Pacific Coast	$1.34
Pac. Coast, ship plates	1.20
Birmingham	0.58
Memphis	0.56
Jacksonville, all rail..	0.70
Jacksonville, rail and water	0.415
New Orleans	0.67

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 30c. to 40c.; ship plates, 30c. to 40c.; ingot and muck bars, structural steel, common wire products including cut or wire nails, spikes, and wire hoops, 30c. to 40c.; sheets and tin plates, 30c. to 40c.; rods, wire rope cable and strands, 75c.; wire fencing, netting and stretcher, 49c.; pipes not over 8 in. in diameter, 50c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Old range non-Bessemer, 51½ per cent iron	5.70
Mesabi Bessemer, 55 per cent iron	6.20
Mesabi non-Bessemer, 51½ per cent iron	5.55

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	11½c.
Iron ore, Swedish, average 66 per cent iron	10.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	48c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	42c.
Manganese ore, Brazilian or Indian, nominal	45c.
Tungsten ore, per unit, in 60 per cent concentrates	$8.50
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	$18.00 to 28.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$117.50
Ferromanganese, British, 80 per cent, f.o.b. Atlantic port, duty paid	117.50
Spiegeleisen, domestic, 19 to 21 per cent, per ton, furnace	$45.00 to 47.50
Spiegeleisen, domestic, 16 to 19 per cent, furnace, per ton	44.00 to 46.50
Ferrosilicon, 50 per cent, delivered, per gross ton	82.50
Ferrosilicon, Bessemer, 10 per cent, per ton, furnace	48.50
Ferrosilicon, Bessemer, 11 per cent, per ton, furnace	51.80
Ferrosilicon, Bessemer, 12 per cent, per ton, furnace	55.10
Ferrosilicon, Bessemer, 13 per cent, per ton, furnace	59.10
Ferrosilicon, Bessemer, 14 per cent, per ton, furnace	64.10
Silvery iron, 6 per cent, per ton, furnace	37.00
Silvery iron, 7 per cent, per ton, furnace	38.00
Silvery iron, 8 per cent, per ton, furnace	39.50
Silvery iron, 9 per cent, per ton, furnace	41.50
Silvery iron, 10 per cent, per ton, furnace	43.50
Silvery iron, 11 per cent, per ton, furnace	46.80
Silvery iron, 12 per cent, per ton, furnace	50.10
Ferrotungsten, per lb. contained metal	88c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	12c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines		$22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines		23.50
Per 1000 f.o.b. works:		
Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$48.00 to $51.00	$43.00 to $46.00
Ohio	45.00 to 47.00	40.00 to 43.00
Kentucky	45.00 to 47.00	42.00 to 45.00
Illinois	48.00 to 50.00	45.00 to 47.00
Missouri	48.00 to 50.00	38.00 to 43.00
Ground fire clay, per net ton		6.50 to 9.50
Silica Brick:		
Pennsylvania		42.00 to 45.00
Chicago		52.00
Birmingham		48.00
Ground silica clay, per net ton		10.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		50.00

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$42.50
Rolling billets, 2-in. and under	42.50
Forging billets, ordinary carbons	$47.50 to 50.00
Sheet bars, Bessemer	42.50
Sheet bars, open-hearth	42.50
Slabs	$42.50
Wire rods, common soft, base, No. 5 to ¼-in.	51.00
Wire rods, common soft, coarser than ¼-in.	$2.50 over base
Wire rods, screw stock	$5 per ton over base
Wire rods, carbon 0.20 to 0.40	$3 per ton over base
Wire rods, carbon 0.41 to 0.55	$5 per ton over base
Wire rods, carbon 0.56 to 0.75	$7.50 per ton over base
Wire rods, carbon over 0.75	$10 per ton over base
Wire rods, acid	$15 per ton over base
Skelp, grooved, per lb.	2.40
Skelp, sheared, per lb.	2.40
Skelp, universal, per lb.	2.40

Finished Iron and Steel, f.o.b. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, per lb.	2.25c.
Rails, light, rerolled, base, per lb.	2.10c. to 2.15c.
Spikes, ⅝-in. and larger, base, per 100 lb.	$3.15
Spikes, ½-in., ⅞-in. and ⅝-in., base per 100 lb.	$3.25 to 3.75
Spikes, ⅜-in., base, per 100 lb.	3.25 to 3.75
Spikes, boat and barge, base, per 100 lb.	3.50 to 3.75
Track bolts, ⅝-in. and smaller, base, per 100 lb.	4.15 to 4.50
Track bolts, ¾-in. and larger, base, per 100 lb.	4.75 to 5.50
Tie plates, per 100 lb.	2.55 to 2.60
Angle bars, per 100 lb.	2.75
Bars, common iron, base, per lb., Chicago mill	2.50c.
Bars, common iron, Philadelphia mill	2.35c.
Bars, common iron, Pittsburgh mill	2.40c.
Bars, rails, steel reinforcing, base, per lb.	2.15c. to 2.25c.
Ground shafting, base, per lb.	3.65c.
Cut nails, base, per keg	$3.25

S. A. E. Semi-finished Castellated Nuts and U. S. S. Semi-finished Slotted Nuts

(To jobbers and consumers in large quantities)

	Per 1000	
	S. A. E.	U. S. S.
¼-in.	$4.60	$4.80
5/16-in.	5.50	6.00
⅜-in.	6.50	7.00
7/16-in.	9.00	9.50
½-in.	11.00	11.50
9/16-in.	15.00	15.00
⅝-in.	19.50	20.00
¾-in.	28.50	28.50
⅞-in.	37.00	37.50
1 in.	58.50	60.50
1⅛-in.	88.00	97.00
1¼-in.	132.00	132.00
1⅜-in.	176.00	176.00
1½	220.00	220.00

Larger sizes—Prices on application

Alloy Steel

S.A.E. Series Numbers		Bars 100 lb.
2100	(½% Nickel, 10 to 20 per cent Carbon)	$3.50
2300	(3½% Nickel)	5.50
2500	(5% Nickel)	8.00
3100	(Nickel Chromium)	4.50
3200	(Nickel Chromium)	6.25
3300	(Nickel Chromium)	8.25
3400	(Nickel Chromium)	7.25
5100	(Chromium Steel)	4.00
5200	(Chromium Steel)	8.25
6100	(Chromium Vanadium bars)	5.25
6100	(Chromium Vanadium spring steel)	5.00
9250	(Silico Manganese spring steel)	4.00
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)		5.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)		4.75
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)		4.50
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)		4.50

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are $10 per gross ton less than net ton price for bars of same analyses. On smaller than 4 x 4-in. billets down to and including 2½-in. sq. there is a size extra of $10 per gross ton; on billets smaller than 2½-in. sq., the net ton bar price applies.

FABRICATED STEEL BUSINESS

Oil Companies the Largest Prospective Buyers—Awards Show an Increase

Awards for the week amounted to around 16,000 tons, compared with 4500 tons in the week previous. Inquiries total about 15,000 tons and include 10,500 tons for tank work and 2800 tons for a pier for the city of New York. The chief items are:

Apartment, Eighty-fourth Street, New York, 750 tons, to Patterson Bridge Co.

Public School No. 47, New York, 1000 tons, to Easton Structural Steel Co.

Smith College, Northampton, Mass., two buildings, 400 tons, to an unnamed fabricator.

Judd Paper Co., Holyoke, Mass., 300 tons, to Palmer Steel Co.

Chicago Tribune Building, sub-structure, 1925 tons, to American Bridge Co.

St. Paul Gas Light Co., St. Paul, Minn., Island Park Power Station, 1500 tons, to St. Paul Foundry Co.

Illinois Central Viaduct at Forty-First Street, Chicago, 1100 tons, to American Bridge Co.

St. Louis-San Francisco Railroad shops at Lindenwood, Mo., 325 tons, to Spuck Iron & Foundry Co., St. Louis.

Federal Reserve Bank, St. Louis, vault framing, 100 tons, to Mississippi Valley Structural Steel Co.

Central Vermont Railroad, bridge work, 145 tons, to American Bridge Co.

Northern States Power Co., high bridge generation station at St. Paul, Minn., 4500 tons or more, to Minneapolis Steel & Machinery Co., and St. Paul Foundry Co.

City of Chicago, bridge at California Avenue, 100 tons, to American Bridge Co.

Missouri Pacific Railroad, riveted span at Watson, Ark., 375 tons, to Virginia Bridge & Iron Co.

Calumet Steel Co., Chicago Heights, Ill., crane building, 275 tons, to unnamed fabricator.

South Side Elevated Railroad Co., Chicago, alterations, 441 tons, to Hansell-Elcock Co.

Scottish Rite Temple, Nashville, Tenn., 800 tons, to International Steel & Iron Co.

Cement plant, Nashville, Tenn., 1000 tons, to Nashville Bridge Co.

Wilson Dam, near Muscle Shoals, Ala., 400 tons to Riter-Conley Co.

Kresge Building, Wilmington, Del., 140 tons, to R. B. Lederle.

Pennsylvania Railroad, Baltimore Division, bridge, 100 tons, to Bethlehem Steel Co.

Fisher Body Corporation, Cleveland, factory extension, 300 tons.

Hotel Jamestown, Jamestown, N. Y., 300 tons; general contract placed with the Hunkin Conkey Construction Co.

Salvation Army buildings, Cleveland, 100 tons; bids taken.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Pan-American Petroleum Co., tank work, 4500 tons.

Sinclair Crude Oil Purchasing Co., tanks, 6000 tons.

Pier on North River at Forty-Fourth Street, for New York City, 2800 tons.

Consolidated Electric Light Co., Baltimore, 300 tons.

Public Service Commission, Newark, 500 tons.

Seaboard Air Line, bridge, 250 tons.

School building, city of Chicago, 500 tons.

Federal Reserve Bank Building, Minneapolis, material for vault for which 500 tons of steel was specified, will be provided for by patented reinforcing instead of structural steel.

New Jersey State Highway Commission, bridge at Burlington, N. J., 160 tons.

Little Business in Railroad Equipment

Both orders and inquiries for cars are light, the only award coming from the Kansas City Southern for 500 box cars.

The Missouri Pacific is in the market for 60 passenger cars.

The Atchison, Topeka & Sante Fe is in the market for 200 flat cars. The Erie Railroad is inquiring for repairs to 498 coke cars, which are to be changed to box cars.

The Kansas City Southern has let contract for 500 box cars to the Pennsylvania Tank Car Co.

STEEL AND INDUSTRIAL STOCKS

Seasonal Dullness More Pronounced Owing to Continued Uncertainty

Over the market in steel and industrial stocks lies the restraint imposed by the season and by the uncertainty in the general situation, particularly as regards the Continental disturbance. The opening was marked with firmness in most issues, Crucible selling at 65, nearly 4 points above its last week's low. There was no period of real activity, however, at any time. A slight reaction occurred in Steel common on the Steel Corporation's announcement of a decline in unfilled orders reaching nearly 600,000 tons. The market leader sold off ¾ of a point from the previous high of 91½ during the day. Fluctuations in American Car & Foundry attracted special attention. Its abrupt break of nearly 6 points, which came on Thursday, was puzzling, since the company's business is in excellent condition. The reaction was probably due to speculative trading. There was considerable strengthening at the close, leading steel issues and several industrials making fractional gains.

The ranges on active iron and industrial stocks from Monday of last week to Monday of this week were as follows:

	Low	High		Low	High
Allis-Chalmers...	39½	40⅞	Lima Loco.....	59¾	62¼
Allis-Chal. pf....	90	90¼	Midvale Steel....	23	23⅝
Am. B. S. & Fdy.	70⅛	70¼	Nat.-Acme	10⅝	10¾
Am. Can.....	86	90⅜	Nat. En. & Stm..	55⅞	57⅛
Am. Can pf.....108¼		109¼	N. Y. Air Brake.	30	31½
Am. Car & Fdry.148¼		156⅞	Nova Scotia Steel	19	19
Am. C. & F. pf...121¼		121½	Otis Steel.....	7⅝	8¼
Am. Loco.....134		135¼	Otis Steel, pf....	51	51
Am. Loco., new..	65¼	67⅛	Pressed Stl. Car..	53	55
Am. Loco. pf....116½		118	Pressed Stl. pf...	88¼	90
Am. Radiator....	81	82	Ry. Steel Spring.101¾		102
Am. Steel Fdries.	32¾	33¾	Repogle Steel....	13½	15⅜
Bald. Loco.....115⅝		120⅛	Republic	41⅞	45½
Beth. Steel.....	43¾	46⅜	Republic pf.....	88	89¼
Beth. Stl. 7% pf..	87½	89	Reynolds Spring.	19½	22
Br. Em. Stl. 2 pf.	18⅛	19	Sloss	39¼	43
Chic. Pneu. Tool.	78	79¼	Sloss pf.....	78	78
Colo. Fuel.....	26¾	28	Steel & Tube pf..104¼		105¼
Crucible Steel....	62⅝	65⅜	Un. Alloy Steel..	30	30⅜
Crucible Steel, pf.	86½	86½	U. S. Pipe.....	22½	24½
Gen. Electric....171½		176	U. S. Pipe pf....	68⅞	68⅞
Gt. No. Ore Cert.	26¼	28⅛	U. S. Steel.....	89½	92
Gulf States Steel	69¼	73⅛	U. S. Steel pf....118		118⅞
Int. Har.....	76½	78¾	Vanadium Steel..	27	33¾
Int. Har. pf.....110		110	W'house Air Br.	78	80

Industrial Finance

The M. A. Hanna Co., Cleveland, reports net income for the five months ending May 31, of $807,265, after deducting all charges including interest and depreciation. This is at the annual rate before Federal taxes of $1,937,436 and, after allowances for taxes, is equivalent to more than twice the dividend requirements on the 7 per cent, first preferred stock. Earnings during 1922 before Federal taxes were $1,037,055. The Hanna Furnace Co., a subsidiary, for the five months ending May 31, reports a gross income of $742,045. In the corresponding period of 1922 there was a deficit of $471,993. Net profit for the five months amounted to $140,004, against a loss of $1,054,476 during the corresponding period of 1922.

The Rising Sheet Metal Works, Inc., New York, has been incorporated with capital stock of $10,000 to manufacture sheet metal products. I. Ejssner and S. Ejssner, the incorporators, 650 East Sixteenth Street, have carried on a sheet metal business for several years.

The Cesare Electric & Radio Corporation, New York, has been incorporated with $50,000 capital to manufacture electrical and wireless equipment. B. D. I. Cesare, president, informs THE IRON AGE that the corporation is still in a formative stage, but that when a German associate arrives in this country the electrical equipment will be assembled at 243 West Fifty-fourth Street, New York.

Edwin C. Seward, Ocean Grove, N. J., has been appointed receiver in equity for the Turner Machine Co., 28 Eagle Street, Newark, N. J. The application for the appointment states that the assets are $340,531 and the liabilities $192,837. Henry H. Turner is president.

The Frank J. Smith Foundry Co., St. Louis, has increased its capital stock from $8,000 to $24,000. The additional capital will be used to provide for expansion of the business, according to L. W. O'Neil, president. He said that definite plans have not as yet been decided upon, but changes probably will be made by the first of the year. Other officers of the company are: vice-president, Otto Karbe; treasurer, Frank J. Smith, and secretary, J. J. Waddock.

Stockholders of the Collins Co., Collinsville, Conn., edged tools, have authorized an increase in capitalization from $1,000,000 to $3,000,000.

NON-FERROUS METALS

The Week's Prices

Cents Per Pound For Early Delivery

	Copper, New York		Straits Tin	Lead		Zinc	
July	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
11.....	15.00	14.37½	38.32½	6.00	5.70	6.50	6.15
12.....	15.00	14.50	38.62½	6.00	5.70	6.55	6.20
13.....	15.00	14.50	38.07½	6.00	5.70	6.52½	6.17½
14.....	15.00	14.50	....	6.00	5.70	6.50	6.15
16.....	15.00	14.50	38.00	6.00	5.85	6.50	6.15
17.....	15.00	14.50	38.00	6.00	5.90	6.47½	6.12½

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, July 17.

The markets are all exceedingly quiet, some of them bordering on stagnation. Buying of copper has nearly stopped, and there has been no activity in the tin market. Lead prices seem to have become stabilized. The advance in zinc has continued only to be followed by a slight recession.

Copper.—The moderate amount of business in electrolytic copper, which was in evidence during part of last week, has given place to a lack of new business and almost no inquiry. Consumers of copper are apparently buying only such raw materials as are needed for new orders for finished products which at present are on the decline rather than otherwise. The price of electrolytic copper advanced during the last week until 14.75c. delivered was reached. This quotation is apparently the prevailing one today, but it is largely nominal, and there are indications that a fair test of the market would find business capable of being done at a shade under this level or possibly as low as 14.62½c. delivered. A fair business for export is, however, still in evidence. Lake copper is quoted at 15c., delivered.

Tin.—The past week has been one of the most inactive in a long time. There has hardly been enough business to establish price levels. With the exception of July 10 and 13, when there were a few sales of Straits tin, there has been scarcely any business to speak of and the sales that have been made were largely forced ones. The market on the whole is as near stagnation as is possible, and there are no features of interest. Quotations in London today are about £3 per ton less than a week ago, with spot standard quoted at £177 15s., future standard at £178 15s. and spot Straits at £181 15s. The quotation for spot Straits tin on this side was 38c., New York. Arrivals thus far this month have been 2270 tons with 6972 tons reported afloat.

Lead.—The market is firmer in tone, with higher prices, both here and in St. Louis. Quotations at New York are unchanged for the leading interest, but some independents have sold as high as 6.20c. At St. Louis prices have advanced about 20 to 25 points during the week to 5.90c. to 5.95c. One reason for the firm tone of the market as a whole, particularly in the West, is said to be due to the fires in Idaho which have interfered with the operation of the Heckla and some other large lead-silver mines.

Zinc.—The advance in this market which was in evidence a week ago continued until the middle of last week, when the maximum of 6.20, St. Louis, or 6.55, New York, was reached. Since then prices have receded until today prime Western for spot, July or August delivery, is quoted at 6.10c. to 6.15c., St. Louis, or 6.45c. to 6.50c., New York, which, however, is still 5 to 10 points higher than the prices prevailing a week ago. The publication of the statistics of the American Zinc Institute for June, made public this week, showed that production of slab zinc during the month was 42,840 tons with the shipments 38,686 tons, so that stocks in smelters' hands were increased during June 4154 tons, being 17,173 tons on June 30. This has been something of a bearish influence. The high prices asked for ore have also been a drag on the market, it being claimed that at present prices the metal could not be refined at a profit in a 6.10c. to 6.15c. market. There is still a premium for September and October delivery of about 5 points per month.

Nickel.—Quotations for shot and ingot metal are unchanged at 29c. to 32c. per lb., with electrolytic nickel held at 32c. by the leading producers. In the outside spot market quotations for shot and ingot nickel are 29c. to 32c. per lb.

Antimony.—The market is quiet and a little higher, with wholesale lots of Chinese metal for prompt or future delivery quoted at 6.85c. to 6.90c. per lb., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted in wholesale lots by importers who can obtain the metal at 26.50c. to 27c., New York, duty paid. Quotations from the leading domestic producer are not made public.

Old Metals.—Business is slow but there appears to be more optimism among some dealers whose tendency is to hold stock rather than sell at the present low basis. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible	14.25
Copper, heavy and wire	13.25
Copper, light and bottoms	11.25
Heavy machine composition	11.00
Brass, heavy	8.50
Brass, light	7.00
No. 1 red brass or composition turnings	9.00
No. 1 yellow rod brass turnings	7.50
Lead, heavy	5.50
Lead, tea	4.25
Zinc	4.50

Chicago

CHICAGO, July 16.—Copper is slightly firmer but unchanged in price. Spelter has advanced. Old metal prices are practically unchanged. We quote in carload lots, Lake copper, 15.25c.; tin, 38c. to 39c.; lead, 5.90c.; spelter, 6.15c. to 6.20c.; antimony, 8.50c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11.50c.; copper bottoms, 10c.; red brass, 8.50c.; yellow brass, 6c.; lead pipe, 4.50c.; zinc, 3.75c.; pewter, No. 1, 22.50c.; tin-foil, 25c.; block tin, 30c., all buying prices for less than carload lots.

Detroit Scrap Market

DETROIT, July 17.—Production schedules for the remainder of the quarter are being set in automotive lines and the past 10 days has brought out considerable inquiry for casting quotations. Melters are buying to cover orders on their books with the result that purchases of pig iron and waste material are very light.

The following prices are quoted on a gross ton basis f.o.b. cars producers' yards, excepting stove plate, automobile and No. 1 machinery cast, which are quoted on a net ton basis:

Heavy melting steel	$14.50 to $16.50
Shoveling steel	14.50 to 16.50
No. 1 machinery cast	18.00 to 20.00
Cast borings	12.50 to 13.00
Automobile cast scrap	22.00 to 24.00
Stove plate	15.00 to 17.00
Hydraulic compressed	14.00 to 15.00
Turnings	7.50 to 8.00

Suit Against American Chain Co.

Suit has been filed against the American Chain Co. by United States District Attorney Hayward under the Sherman anti-trust act, seeking to restrain the company from alleged monopoly and restraint of trade in the manufacture and sale of automobile bumpers. Sixty per cent of the bumper industry is controlled by the company, it is asserted, and nearly complete control will result if it wins patent litigation now in process. The Government alleges that about 10 companies in the Middle West have assisted in the monopoly.

PERSONAL

Charles S. Boardman, at a recent meeting of the board of directors of the Strong Steel Foundry Co., Buffalo, was elected vice-president and manager of sales. Mr. Boardman became designing and construction engineer with the Lackawanna Steel Co. in 1901, when that company had started construction of its plant at Buffalo. Upon completion of this plant, he joined the firm later known as Conkling & Boardman, consulting engineers, Buffalo, and was engineer for several steel companies in and near Buffalo. During this time Mr. Boardman invented and patented Lackawanna steel sheet piling. In October, 1913, he returned to the Lackawanna Steel Co. as engineer of the steel sheet piling department. Upon the purchase of the Lackawanna Steel Co. by the Bethlehem Steel Co., he continued in the same capacity with Bethlehem company, which he left to join the Strong Steel Foundry Co.

Matthew Mann, Cortland, N. Y., has been made manager of the Vitrified Wheel Co., Westfield, Mass.

Percy R. Drenning, formerly with the T. H. Symington Co., has become associated with the Boyden Steel Corporation as vice-president, with headquarters at Baltimore.

Thomas H. Endicott has been appointed vice-president and general manager of the Green Equipment Corporation, Chicago. He was formerly sales engineer for the Crocker-Wheeler Co., Ampere, N. J., and later was sales manager for the metal cutting department of the E. C. Atkins Co., Indianapolis. Recently he organized a company to serve as engineering consultant to industrials, with headquarters in Indianapolis.

H. B. Speasmaker, for 12 years purchasing agent of the Diamond Alkali Co., Pittsburgh, has resigned to become assistant to H. R. Blickle, president Fort Pitt Bridge Works, Oliver Building, Pittsburgh.

Ben Wyckliff Twyman, general manager Nash Motor Co. four-cylinder car division, Milwaukee, since its establishment four years ago, and George C. Bechtel, general superintendent, have resigned. Mr. Twyman was president and general manager of the Inter-State Automobile Co., Muncie, Ind., prior to joining the Nash organization in 1919.

W. A. Thompson, comptroller Allis-Chalmers Mfg. Co., Milwaukee, has been appointed secretary, and Raymond Dill, assistant secretary-treasurer, becomes treasurer, filling the vacancy caused by the death of Henry Woodland, secretary-treasurer. J. A. Keogh has been appointed assistant secretary, and D. A. Stuart, auditor, is promoted to assistant treasurer.

Charles P. Woods has severed his connection with the Triumph Electric Co., Cincinnati, and will represent the Arctic Ice Machine Co., Canton, Ohio, in southern Ohio, Kentucky, southern Indiana, southern West Virginia and western Virginia. His headquarters will be located at 605 Mercantile Library Building, Cincinnati.

Roy M. Welch has been appointed secretary to the president of the Youngstown Sheet & Tube Co., Youngstown, Ohio, succeeding Walter Meub, who was also secretary of the company. Mr. Meub is now devoting his entire time to secretarial work. Mr. Welch has been assistant to the president in charge of industrial relations.

Donald D. Herr, vice-president Arthur G. McKee & Co., Cleveland, left this week for the Orient, where he will visit various steel and iron plants, including the Indian Iron & Steel Co., Asansol, India, whose blast furnace plant was designed and equipped by the McKee firm.

Ernest J. Poole, general superintendent Carpenter Steel Works, Reading, Pa., was reelected president of the Berks County Manufacturers' Association at Reading last week.

Harold C. Jones, vice-president and advertising manager of the Inland Steel Co., Chicago, whose resignation was announced last week, has become president of the Mid-West Forging Co., Chicago Heights, Ill. He was connected with the Inland Steel Co. for 20 years and is a son of G. H. Jones, one of the founders of the company. The Mid-West Forging Co. was organized four years ago by Mr. Jones and others, and the expansion of its business caused him to decide to give it his entire time.

R. H. Hubbell, formerly connected with the Norton Co. and the Heald Machine Co., both of Worcester, Mass., has been placed in charge of machine tool sales of the Greenfield Tap & Die Corporation, Greenfield, Mass.

C. J. Brown, formerly associated with Frank M. Erb, sales engineer, Fulton Building, Pittsburgh, has joined the Mine Safety Appliance Co., Pittsburgh, with headquarters in Fairmont, W. Va., to handle sales in northern West Virginia. W. L. Graham, with the Heppenstall Forge & Knife Co., Pittsburgh, for a number of years, will handle sales in eastern Ohio and western Pennsylvania for Frank M. Erb, which territory was formerly handled by Mr. Brown.

J. C. Gore, for many years connected with the Domhoff & Joyce Co., pig iron merchants, has resigned to become general sales agent for the St. Louis Coke & Iron Co., with offices in the Continental and Commercial Bank Building, Chicago. The change takes effect Aug. 1. Mr. Gore was for nine years representative of the Domhoff & Joyce Co., in Cincinnati and Chicago. No announcement has been made regarding his successor.

Charles C. Gibson, who has been vice-president and secretary of the Mullins Body Corporation, Salem, Ohio, has been elected president of the corporation, to succeed W. H. Mullins, who will continue as chairman of the board of directors. Frederick P. Mullins has succeeded Mr. Gibson as vice-president and secretary.

James G. Heaslet has been elected president of the new Rollin Motors Co., Cleveland, recently organized by Rollin H. White. R. T. Hodgkins is vice-president and general sales manager, and C. D. Fleming, secretary-treasurer. Mr. White is chairman of the board.

George D. Martin has been elected secretary-treasurer of William Cramp & Sons Ship & Engine Building Co., Philadelphia.

First Iron Ore Delivered Direct to River Rouge Plant

The first iron ore cargo to be delivered direct to the River Rouge plant of the Ford Motor Co. reached that plant July 18. Last year the Ford company delivered a portion of its ore to the docks of the Hanna Furnace Co. in Detroit, from which it was transshipped on barges and some was placed on lighters and transferred to barges. Recently the river has been dredged sufficiently so that the ore boats can now reach the ore handling plant at the Ford docks. The Ford company carried over considerable ore last season and the cargo received during the week was the first ore that it had taken this year.

Texas Steel Co. Will Roll Bars

The Texas Steel Co., Fort Worth, Texas, has been incorporated with a capital of $2,500,000, and the plant, which was formerly that of George W. Armstrong & Co., is being converted to make billet steel bars. Ingots will be cast from electric furnaces, reheated in oil-burning furnaces and reduced into merchant bars on 8-, 10- and 16-in. mills. The company will also make cotton ties, reinforcing steel, small shapes, and steel castings. Equipment has been purchased and is on the ground. The officers are: President, John H. Kirby; vice-presidents, D. R. Knapp, J. F. Foster; secretary, G. W. Link; treasurer, Marcus Bright.

OBITUARY

Stanton Sholes Freeman

Stanton Sholes Freeman, treasurer and general manager of the Port Henry Iron Ore Co., with offices in New York and mines at Mineville, N. Y., died at Forest Hills, L. I., July 14, after a long illness. Mr. Freeman was born at Columbus, Ohio, Dec. 21, 1874. He graduated from Ohio State University in 1898, with the degree of mining engineer. After being employed for about a year as a chemist in Pittsburgh, he became connected with the Carbon Furnace Co., Parryville, Pa., with which he remained until 1916. He was superintendent of the blast furnace for a number of years and later became general manager, his duties including superintending of the furnace and selling of the pig iron. In 1916 he entered the service of the Port Henry Iron Ore Co., and was also for a time receiver of the Temple Furnace, Temple, Pa. He was a past president of the Ohio State University Alumni Association of New York, a member of the Ohio Society, the Engineers' Club and the American Iron and Steel Institute. He was a man of marked ability as an operator of plants and as a salesman, and was noted for his enthusiastic service to the organizations with which he was connected. He is survived by Mrs. Freeman and a daughter, Miss Orra.

STANTON S. FREEMAN

C. L. WAGANDT, a director of the National Enameling & Stamping Co., and manager of Baltimore factory, died at his home in Baltimore, on July 7, aged 65 years. Starting in the industry 50 years ago as an apprentice in the plant of Keehn & Hagerty, Mr. Wagandt soon became manager of a department and eventually assumed full charge of the factory. In 1902, when the Keehn & Hagerty factory was consolidated with the National Enameling company, he remained as manager of the Baltimore plant and later became a director of the company.

JOSEPH F. MITCHELTREE, who for 24 years was associated with the coal department of the M. A. Hanna Co., Cleveland, died July 15, age 53 years. Mr. Mitcheltree was manager of the branch office of the Hanna company in Toledo for a number of years, or until the Toledo office was discontinued.

FRED L. AVERY, president for 10 years past of the Avery & Saul Corporation, South Boston, sheet metal, died suddenly on July 14, at his home in Winchester, Mass. Mr. Avery was past president of the New England Iron and Hardware Association and was prominently identified with the New England sheet metal business. He was born in Roxbury, Boston, 59 years ago and had devoted practically his entire business career to this industry.

Nearly all the work of the Bureau of Standard's foundry has been limited to the preparation of non-ferrous alloys. Recently the bureau purchased a small cupola to be used for investigational purposes in connection with the ferrous alloys and also to provide metal for castings used by the bureau and other branches of the Government. During the past month, the construction of a charging platform and foundations for the cupola were completed. The installation and lining of the cupola are now in progress and the equipment will soon be ready for service.

STRUCTURAL STEEL BOOKED

June Contracting 51 Per Cent of Capacity, a Decline of 7 Per Cent from the May Tonnage

WASHINGTON, July 17.—June sales of fabricated structural steel, based on figures received by the Bureau of the Census in cooperation with the Structural Steel Society, showed a decline from the May figures, which in turn were much less than the previous month's sales. Total sales of 112,786 tons were reported for June by firms with a capacity of 223,595 tons per month.

Tonnage booked each month by 175 identical firms, with a capacity of 229,575 tons per month, is shown below, together with the percentage of shop capacity represented by these bookings. For comparative purposes the figures are also prorated to obtain an estimated total for the United States on a capacity of 250,000 tons per month.

1922	Actual Tonnage Booked	Per Cent of Capacity	Estimated Total Bookings
April	200,588	87	217,500
May	184,638	81	202,500
June	168,498	73	182,500
July	157,631	69	172,500
August	156,011	68	170,000
September	146,146	64	160,000
October	132,450	58	145,000
November	111,794	49	122,500
December	138,024	60	150,000
1923			
January	172,415	75	187,500
February	183,938	80	200,000
March	218,997	95	237,500
April	184,884*	81	202,500
May	130,929**	58	145,000
June	112,786†	51	127,500

*Reported by 166 firms with a capacity of 228,455 tons.
**Reported by 157 firms with a capacity of 225,790 tons.
†Reported by 152 firms with a capacity of 223,595 tons.

British Pig Iron and Steel in June

LONDON, ENGLAND, July 17 (*By Cable*)—The pig iron and steel production in June recorded a decline from the heavy output in May, when new records for the year were made. In June 692,900 gross tons of pig iron was made which compares with 714,200 tons in May. The June production was the second largest this year. The steel ingot and castings output in June was 767,700 tons as compared with 821,000 tons in May. The June figure was the third largest this year.

Comparative data for the British steel industry in gross tons per month are as follows:

	Pig Iron	Steel Ingots and Castings
1913, per month	855,000	639,000
1920, per month	669,500	755,600
1921, per month	217,600	302,100
1922, per month	408,300	486,000
January, 1923	567,900	634,300
February	543,400	707,100
March	633,600	802,500
April	652,200	749,400
May	714,200	821,000
June	692,900	767,700

The June pig iron output, while less than the 1913 rate, is larger than the 1920 monthly average. In steel the June production exceeds both the 1913 and the 1920 rate of output.

To Reorganize Ashtabula Steel Co.

CLEVELAND, July 17.—Plans for the reorganization of the Ashtabula Steel Co., Ashtabula, Ohio, will be considered by the directors at a meeting July 18. It is understood that should a pending deal be consummated, the control of the plant will pass to other interests now identified with the sheet steel industry in Ohio.

The Hydraulic Steel Co. reports net profits of $74,993, after expenses, taxes and interest charges for the quarter ended June 30, 1923.

Machinery Markets and News of the Works

FEW ORDERS REPORTED

Activity in Some Centers Fair, but for Most Part Light

New Railroad Inquiries Include Pennsylvania, New York Central and Illinois Central

In the majority of centers, sales during the week were light. A fair number of orders from both manufacturing interests and railroads is reported from Cincinnati, where demand from the automotive industries for upright drills also has been noted. Improvement over June in the inquiries and orders of a maker of multiple-spindle automatic screw machines is reported from Cleveland. A few small lot inquiries from Detroit automobile companies have been noted.

Demand from Wisconsin for machine tools and other equipment is expected to follow the collapse of the new taxation program recently before the legislature. Companies that suspended plans for plant extensions pending the outcome of the taxation bill proposed will, it is thought, now proceed with those extensions.

Railroad inquiries include a tentative list sent out by the New York Central Railroad for eight machines on which it has asked for approximate prices. The Pennsylvania Railroad is inquiring for a 5- and 6-ft. radial drill for its Pennsylvania shops, a vertical turret lathe and a 21-in. drill for its St. Louis shops, and some tools for its Columbus, Ohio, shops.

The Illinois Central has put out a few new inquiries, including a 500-lb. power hammer, a 32-in. shaper, a 20-in. and a 42-in. drill press. From New England it is reported that one of the carriers previously inquiring on three machines has added four more tools to the list.

The Elgin, Joliet & Eastern Railroad, which was expected to close against its list this week, has asked for revised quotations.

The American Steel & Wire Co. is in the market for a 72-in. boring and turning mill for its Anderson, Ind., plant. The Westinghouse Electric & Mfg. Co. closed for a planer for its East Pittsburgh works, and is understood to be slowly specifying against its Sharon, Pa., works list.

Purchases by the railroads during the week include those of the Norfolk & Western, the Denver & Rio Grande Western, and the St. Louis & San Francisco.

New York

NEW YORK, July 17.

THE Norfolk & Western Railroad has placed orders for at least a part of its recent large list, one Eastern manufacturer having received orders for a 72-in. and a 42-in. boring mill, an axle lathe and a 600-lb. steam hammer. Other business has been placed with machine-tool builders in Cincinnati and elsewhere. The St. Louis-San Francisco Railroad has purchased a 600-ton locomotive wheel press. The Union Tank Car Co., New York, has purchased a number of large machines, including a car-wheel borer and a 400-ton wheel press. A South American railroad shop has purchased several large machines from a New York company. Other than in railroad business the market is quiet.

Work will commence on rebuilding the portion of the plant of the Tottenville Copper Works, Tottenville, S. I., comprising 14 buildings, destroyed by fire last April, with loss of $600,000. The main structure will be 75 x 300 ft. Lockwood, Greene & Co., 101 Park Avenue, New York, are engineers. Benjamin Lowenstein is president, and Adolph Weiss, general manager.

The Stinzing Machine Co., 250 Fourth Avenue, Long Island City, has inquiries out for a power press, Bliss type.

John Hrabush, 40 Crescent Street, Long Island City, manufacturer of automobile trimmings and parts, has plans for a one-story machine and repair shop addition, 45 x 55 ft. Richard L. Lukowsky, 119 Newton Avenue, Astoria, L. I., is architect.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until July 31, for 15,000 sq. ft. of wire cloth for the South Brooklyn Navy Yard, schedule 1094; until July 24, for 75,000 ft. of bell wire, schedule 1093.

The Adirondack Power & Light Corporation, State Street, Schenectady, N. Y., has plans for a new power house at North Albany, to cost $45,000. The company has purchased the plant and system of the Canastota Power & Light Co., Canastota, N. Y., and will make extensions and improvements. The property will be merged with the Adirondack company system.

Frederick Streicher, 105 John Street, New York, operating a die-cutting works, is planning the installation of a vertical milling machine.

The Jamaica Water Supply Co., Shelton Avenue, Jamaica, Brooklyn, is planning the erection of a new electrically operated pumping plant at 118-50 128th Street, Richmond Hill, L. I.

The Unity Gold Mines Co., 120 Broadway, New York, has made application for permission to construct a hydroelectric power plant on the Elk River, Idaho National Forest, Valley and Idaho counties, Idaho.

The New York Central Railroad Co., Grand Central Terminal, New York, has preliminary plans for a new engine house with repair shop at Oswego, N. Y., estimated to cost $150,000. G. W. Kittredge is company engineer.

The Utica Gas & Electric Co., Utica, N. Y., has plans for the installation of a hydroelectric generating station at the new dam at Stewarts Landing, N. Y., near Canada Lake, with initial capacity of about 7500 hp.

Following the recent consolidation of the Hodgman Rubber Co., 8 West Fortieth Street, New York, with plant at Tuckahoe, N. Y., and the Paramount Rubber Consolidated, Inc., Philadelphia, a subsidiary company has been organized under the name of the Paramount Rubber Co., Ltd., to operate in Canada. The new company has purchased the plant of the Regal Rubber Co., Sherbrooke, Que., and plans are under way for extensions.

The Linde Air Products Co., 30 East Forty-second Street, New York, manufacturer of industrial oxygen, etc., will commence the erection of the first unit of its proposed plant on property recently acquired at Tulsa, Okla., estimated to cost $225,000, including machinery.

G. H. Stetson, 8 West Fortieth Street, New York, representing electric power interests, has applied for permission to build and operate a hydroelectric power plant on the Colorado River, near Bulls Head Rock, vicinity of Needles, Ariz., with initial capacity of 160,000 hp.; also for a similar plant on the same river at Boulder Canyon, Ariz.

The State Canal Board, Albany, N. Y., has approved plans prepared by Dwight B. Ladu, State engineer, for a grain elevator on the barge canal terminus at Oswego, N. Y., estimated to cost $1,200,000. A fund will be provided to carry out the construction during the year. The structure will be 69 x 213 ft., with all machinery electrically operated; the conveyor system will have a capacity of 20,000 bu. per hr., and will be supplemented with a low pressure conveyor system for dust cleaning. Movable steel marine towers will be installed on the side of the elevator, 158 ft. high, 24 ft. wide and 30 ft. long, mounted on car trucks, for loading and unloading service.

The Walter Motor Truck Co., 243 West Sixty-first Street, New York, has leased a portion of the factory now being completed at the Queens Boulevard and Hulst Street, Long Island City, for a branch works. The other part of the structure has been leased by the Boyce-Veeder Corporation, 68 Hunters Point Avenue, Long Island City, manufacturer of fire extinguishers.

The Elk Machine Tool Corporation, recently organized to take over and expand the business of the Elk Mfg. Co., 1926 Broadway, New York, is arranging for the early occupancy of a new plant at 243 West Seventeenth Street, New York, to be given over to the production of precision tools, patented by J. C. Elkin, mechanical engineer, who will be president of the new company, in charge of manufacture.

Contract has been let by the Great Atlantic & Pacific Tea Co., 150 Bay Street, Jersey City, N. J., through its subsidiary, the Atlantic Storage Warehouse Co., to the Turner Construction Co., New York, for a new baking plant, four stories, 95 x 200 ft., at 141st Street and the Southern Boulevard, to be provided with ovens, power apparatus, conveying machinery and other equipment, estimated to cost $150,000.

The General Electric Co., 120 Broadway, New York, has disposed of its seven-story plant at 527-31 West Thirty-fourth Street, and will discontinue operations at this location.

Bids will be asked about Aug. 20 by the Common Council, Glen Rock, Ridgewood, N. J., for a pumping plant to be used in connection with extensions in the sewerage system, estimated to cost $55,000. H. J. Harder, 129 Market Street, Paterson, N. J., is engineer.

The New Jersey Power & Light Co., Dover, N. J., will build an addition to its local power station, to be used as an auxiliary in connection with a new generating plant on the Delaware River, near Holland, N. J., for which foundations are being laid. It will be steam-operated, with initial capacity of 200,000 kw. Eugene L. White is vice-president.

A manual training department will be installed on the third floor of the new high school building now in course of erection on Devon Street, Kearny, N. J., estimated to cost $1,000,000. Guilbert & Betelle, Chamber of Commerce Building, Newark, are architects.

The Wheeler Engineering & Condenser Co., Carteret, N. J., has purchased land adjoining its plant at East Carteret, and is said to be planning an addition, to include a one-story foundry.

The Pleasantville Gas Co., Pleasantville, N. J., will make extensions in its steam power plant, gas generating works and system, to cost about $200,000. Permission has been granted to issue stock in this amount.

The Board of Education, Montclair, N. J., has approved plans for an addition to the Glenfield school, to include two new shop buildings, one of which will be equipped for manual training; the other will be used for domestic science work.

The Public Service Electric Co., Newark, has applied for permission to issue stock for $12,750,000, for extensions in power plants and system, entirely separate from its new power project on the Hackensack River, Kearny, N. J., recently noted. The work will include an extension to the Essex power station, Point-No-Point, to cost $1,000,000; addition to the Marion power plant, Jersey City, $750,000, and extensions to the power plants at Perth Amboy, Newark, Hoboken, Camden, Burlington and Trenton to cost $750,000, collectively. New electrical substations and transmission lines will also be built in the last noted districts. N. A. Carle is chief engineer.

F. H. Crawford & Co., 299 Broadway, New York, are in the market for a vertical hydraulic press with single ram, capacity 750 to 1500 tons, stroke not less than 12 in. It must be arranged for motor drive and complete with pump.

Philadelphia

PHILADELPHIA, July 16.

A ONE-STORY power house addition, to cost $90,000, will be erected at the plant of the W. J. McCahan Sugar Refining Co., Tasker Street wharf, Philadelphia.

J. Matlack, 518 North Thirty-second Street, Philadelphia, operating a machine shop, plans for the installation of a power bench lathe.

The Baldwin Locomotive Works, Philadelphia, is considering plans for a one and two-story tank shop. Carl C. Bailey is in charge.

A one-story machine repair and service building, 70 x 145 ft., for company motor trucks, will be built by the Gulf Refining Co., Widener Building, Philadelphia, at Fifty-eighth Street and the Schuylkill River, for which plans have been completed.

A one-story power house, 48 x 71 ft., will be erected at the plant of the Philadelphia Tapestry Mills, Inc., Hutchinson Street, Philadelphia.

William L. Charr, 149 South Fourth Street, Philadelphia, architect, has plans for a one-story machine and repair shop at Seventh and Master Streets, for which the name of the owner is temporarily withheld.

The Largman-Grey Co., 3360 Frankford Avenue, Philadelphia, will build a one-story power plant at its new textile mill at Torresdale Avenue and M Street, to cost about $400,000, of which $100,000 will be used for the power house. LeRoy B. Rothschild, 1225 Sansom Street, is architect.

The Philadelphia Commercial Museum, Thirty-fourth Street, is in receipt of an inquiry from a company at Athens, Greece, for light power machinery.

The Yellow Cab Co., 1208 North Thirty-first Street, Philadelphia, will build a one-story machine repair and service works for company automobiles, 100 x 260 ft., on Schuylkill Avenue.

A one-story power house will be erected at the hat manufacturing plant of Frank Schoble & Co., Tenth and Oxford Streets, Philadelphia, to cost $40,000.

In connection with plans for a high-speed transit subway system at Philadelphia, to be built by the city in cooperation with the Philadelphia Rapid Transit Co., it is proposed to make an appropriation of $6,000,000 for the construction of car repair shops, including machinery, and terminal yards. Other equipment to be purchased, exclusive of rails and rolling stock, is estimated to cost $5,890,000. The Transit Commission of the City Council, City Hall, is in charge.

Bids will be received by the City Council, Woodbury, N. J., until July 24 for one switchboard, with switches, fixtures, and other electrical equipment, for installation at the municipal pumping plant at Sewell, N. J. F. F. Kauffmann, Room 301, 13 North Thirteenth Street, Philadelphia, is consulting engineer.

The Magnetic Pigment Co., Cass and Wolverton Streets, Trenton, N. J., has awarded contract to the N. A. K. Bugbee Co., 206 East Hanover Street, for an addition to cost $30,000.

A one-story power house will be erected at the Villa Maria Convent, West Chester, Pa., to cost approximately $40,000. Emile G. Perrot, Boyerstown Building, Philadelphia, is architect.

The Henry, Millard & Henry Co., 1059 West Market Street, York, Pa., manufacturer of machinery, is inquiring for a second-hand multiple four-spindle universal adjustable drill head, to take ¼ to 1-in drills.

The Florin Foundry & Mfg. Co., Florin, Pa., affiliated with the Wincroft Stove Works, Middletown, Pa., P. A. H. Wharter in charge, has preliminary plans for the erection of a new one-story foundry.

The Orangeville Brick & Sheet Products Co., Orangeville, Pa., has tentative plans for a new works, estimated to cost $100,000 including equipment. A power house will be built.

The Pennsylvania Power & Light Co., Allentown, Pa., has acquired the plant and property of the Pennsylvania, New York & New Jersey Power Co., vicinity of Wilsonville, Wayne County, Pa., for $1,250,000. Plans will be prepared for a hydroelectric power house, estimated to cost $5,000,000 with transmission system. The purchasing company has also acquired the Schuylkill Electric Co., operating at Girardville and Ashland, Pa.; extensions and improvements will be made, and the system merged with that of the Pennsylvania company. The latter organization is operated by the Electric Bond & Share Co., 71 Broadway, New York.

Manual training equipment will be installed in the high school to be erected at Red Lion, Pa., estimated to cost $200,000, for which detailed plans will soon be authorized by the local school board, C. E. Smith in charge.

H. G. Smith & Brothers, Scranton, Pa., manufacturers of automobile bodies, springs, etc., are arranging for the removal of their plant to a new building where additional equipment will be provided for increase in production.

Fire, July 6, destroyed a portion of the power house of the John O. Ream Mining Co., Berlin, Pa., with loss estimated at $25,000 including equipment. It is planned to rebuild.

A manual training department will be installed in the new high school to be erected at Plymouth, Pa., estimated to cost $250,000, for which foundations will be laid at once.

The Metropolitan Edison Co., Reading, Pa., is disposing of a bond issue of $1,000,000, a portion of the proceeds to be used for extensions and improvements. Application for a charter has been made for the Metropolitan Power Co., to be operated as a subsidiary. The new company will build a steam-operated electric power plant in the vicinity of Middletown, Pa. It will arrange a bond issue of $3,250,000, a portion to be used for the new plant and system.

The Town Council, Quakertown, Pa., has authorized an immediate call for bids for the installation of a new power unit at the municipal electric lighting plant.

The Crane Market

The crane market is quiet, but a little more business has been placed in the past week than in the week previous. Inquiries, however, are few. Among recent orders are the following:

The Great Northern Paper Co., Madison, Maine, through H. S. Ferguson, engineer, 200 Fifth Avenue, New York, has bought one 20-ton, 3-motor electric crane and one 50-ton, single-motor, double hoist crane from the Cleveland Crane & Engineering Co. and a 20-ton hand-power crane from the Reading Chain & Block Corporation.

The Hershey Chocolate Co., Hershey, Pa., has bought an 18-ton locomotive crane from the McMyler-Interstate Co.

The Baltimore & Ohio Railroad has ordered six 30-ton locomotive cranes from the American Hoist & Derrick Co.

The Southern Pacific Railroad has ordered from an Eastern manufacturer a 200-ton locomotive lift crane and two 15-ton electric cranes.

The Kensington Davis Co., Buffalo, has ordered a 5-ton, 3-motor crane of 28-ft. span from Alfred Box & Co.

The Reliance Steel Casting Co., Pittsburgh, has bought a 5-ton, 3-motor crane of 28-ft. span from Alfred Box & Co.

The Phoenix Utility Co., New York, has ordered a 1½-ton crane of 23-ft. span from Alfred Box & Co.

Commonwealth Edison Co., Chicago, two 125-ton, 122-ft. span electric traveling cranes for the Crawford Avenue plant, from the Whiting Corporation.

Portland Railway, Portland, Ore., a 75-ton, overhead traveling crane, from the Whiting Corporation.

Banner Iron Works, St. Louis, Mo., a 5-ton electric traveling crane, from the Whiting Corporation.

Union Public Service Co., Minneapolis, Minn., a 10-ton hand power crane, from the Whiting Corporation.

Perins Machine Co., Seattle, Wash., a 25-ton hand power crane, from the Whiting Corporation.

Texas & Pacific Railway, Dallas, Tex., a 5-ton hand power crane, from the Whiting Corporation.

Miehle Printing Press & Mfg. Co., Chicago, a 5-ton, 3-motor, cage-operated, overhead traveling crane and a 3-ton, 2-motor overhead crane, from H. D. Conkey & Co.

T. A. Cummings Foundry Co., Chicago, a 2-ton hand-power crane and a 2-ton hand power hoist, from H. D. Conkey & Co.

Johns-Manville, Inc., Waukegan, Ill., a 1-ton underhung traveling crane, from H. D. Conkey & Co.

Standard Seamless Tube Co., Granite Building, Pittsburgh, is asking prices for estimating purposes on a 10-ton crane.

Marietta Mfg. Co., Point Pleasant, W. Va., has indefinitely postponed the purchase of a 10-ton crane.

Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Avenue, Pittsburgh, has deferred action for the present on a 5-ton crane.

The Orrtanna Electric Light & Power Co., Orrtanna, Pa., is planning to rebuild the portion of its power plant destroyed by fire July 7 with loss estimated at $30,000 including equipment.

The Hobson Flatware Co., Lansdale, Pa., recently organized, has leased the building formerly occupied by the Rogers & Davis Co., and will establish a plant for the production of nickel and other metal products. The company is headed by W. H. Hobson and S. F. Aleva.

The Conewago-Dauphin Electric Co. and the Londonderry-Dauphin Electric Co., recently organized, have been granted operating charters and will install power plants and systems at Conewago and Londonderry. The new companies are headed by L. D. West and W. H. Schubert, and are represented by Olmstead, Snyder & Miller, Harrisburg, Pa.

The William Cramp & Sons Ship & Engine Building Co., Philadelphia, announces that it has recently closed large contracts for hydroelectric power machinery and that the I. P. Morris department of the Cramp company is running at capacity as are the other units of the organization. The largest contract is for two 58,000 hp. turbines for the Hydro-Electric Power Commision of Ont., Canada, to be built by the Dominion Engineering Works, Inc., Canadian licensees of Cramp's.

Baltimore

BALTIMORE, July 16.

PROPERTY on Taylor Avenue, Baltimore, totaling about 2½ acres, has been purchased by the Flynn & Emrich Co., 305 North Holiday Street, operating a general machine and iron works, and will be used for the erection of a new plant, consisting of machine shop, foundry, power house and other buildings. It will cost $75,000.

A manual training department will be installed in the new high school to be erected at Newark, Del., estimated to cost $280,000, for which bids will be called at once on a general contract. The Board of Education is in charge.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Aug. 7 for a quantity of screw clamps and wrenches for the Mare Island Navy Yard, schedule 1102.

The Cornice Repair Shop, 313 North Smith Street, Richmond, Va., is planning the installation of a small lathe and other equipment.

The Hackley-Morrison Co., 1798 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a surface condenser, 1000 sq. ft., with steam-driven centrifugal circulating pump.

The Virginia-Western Power Co., Clifton Forge, Va., is disposing of a bond issue of $3,500,000, a portion of the proceeds to be used for extensions, including the completion of a new steam-operated generating plant with capacity of about 500 kw. A. C. Ford is president.

J. P. McConnell and Harold C. Tyler, Radford, Va., are perfecting plans for the organization of a new company to build and operate a stone crushing plant. It will include a power house, quarrying machinery and other equipment.

Bids will be received by the general purchasing officer, Panama Canal, Washington, until July 31 for an electric drill and grinder, centrifugal pumps, deck and power cable, brass and copper tubing, steel and bronze rope, gasoline engine and other equipment as specified in circular 1543.

The Seaboard Motors Co., 1631 West Broad Street, Richmond, Va., is planning the installation of an arbor press, electric drill and other equipment in its machine shop.

Manual training equipment will be installed in the new three-story and basement high school to be erected on West North Avenue, Baltimore, estimated to cost $1,000,000. Competitive sketches and bids will soon be received.

The Atlantic Coast Line Railway Co., Wilmington, N. C., has arranged an appropriation of $1,800,000 for extensions in car and locomotive shops and the installation of additional machine tools and other equipment. J. E. Willoughby is chief engineer.

The Board of Commissioners, District of Columbia, Washington, Room 320 District Building, will receive bids until Aug. 2 for one gasoline-propelled portable crane, with boom and clamshell bucket, as per specifications on file; until Aug. 3 for one engine lathe, 12 in. x 5 ft.

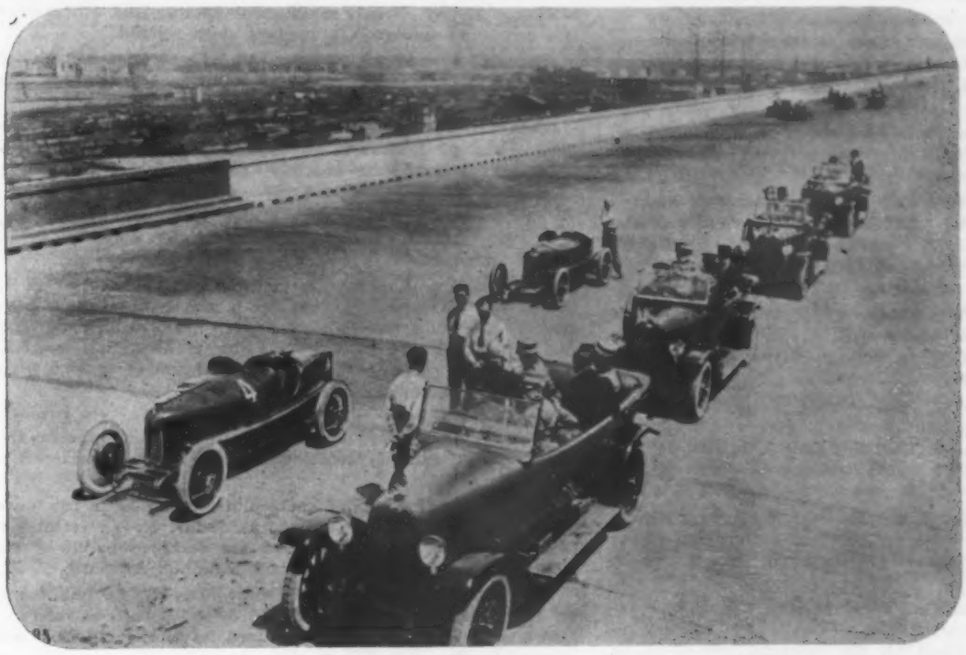
The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for the following equipment: One mechanical blower, 10 to 12 ft. diameter, connected to side-crank steam engine; one 100 hp. slide valve engine; one 750-gal. per min. centrifugal pump, about 300 r.p.m., suitable for connection to waterwheel; one single stage, belt-driven air compressor, with capacity of 1000 cu. ft. per min., and one belt-driven air compressor, 300 cu. ft. per min. capacity; one or more high-speed planers and band resaws; a quantity of 12 to 14-in. truck wheels and axles, suitable for use on 36-in. gage industrial cars; two electric motors, 100 to 150 hp., three-phase, standard voltage; three transformers, 100 kva. each, 2300 volts high tension and 575 volts low tension; three 15-kva. transformers, 200 volts high tension and 550 volts low tension, and three 500-kva. outdoor type transformers, 13,200 volts high tension and 2200 volts low tension.

The Supreme Motor Repair Co., 1631 West Broad Street, Richmond, Va., has inquiries out for a drill press and cylinder grinder.

Bids will be received by the quartermaster, United States Marine Corps, Navy Department, Washington, until July 25 for one single-spindle shaper, one grinder and miscellaneous equipment, schedule 38-1924.

The Currituck County Board of Education, Currituck, N. C., will build a one-story vocational shop at the Poplar Branch School. Leslie N. Boney, Wilmington, N. C., is architect.

The Poole Engineering & Machine Co., Woodbury, Baltimore, is arranging for expansion in the department now devoted to the manufacture of locomotive boosters, designed to provide increased power for train-starting, produced under



A TESTING track 1270 yd. round, built on the roof of the Fiat automobile plant at Lingotto, near Turin, Italy, is used to test the new motor car chassis and finished cars. The illustration shows King Victor Emanuel III inspecting the track. It is over 100 ft. above the ground and 75 ft. wide, surrounding four courts, which are placed in the center of the rectangular factory. The curves are banked 20 ft. high, and great speeds are possible. Gasoline and oil are pumped to the track from underground tanks.

contract with the Franklin Mfg. & Supply Co. Richard W. Alexander has been elected president, effective Aug. 1.

W. M. Whaley & Co., 51 Commercial Place, Norfolk, Va., machinery dealer, is in the market for a 200 to 250-hp. boiler, Scotch marine type, with appurtenances.

The Farrar Lumber Co., Bainbridge, Ga., is in the market for a mechanical fan, second-hand, 45 to 50 in. diameter, double type.

Walter B. Bauguess, Jefferson, N. C., and associates, are planning the construction of a new hydroelectric power plant on the New River, near Jefferson, with initial capacity of about 1000 hp.

The Hickory Chair Mfg. Co., Hickory, N. C., has plans for a new factory, 100 x 225 ft., to replace its works recently destroyed by fire with loss of $100,000, including machinery.

The Bunn-Cadillac Co., Waycross, Ga., is planning to purchase an air compressor.

The W. M. Layton Brick Co., Smithfield, N. C., is planning the installation of a steam shovel at its clay properties, new or second-hand.

The Shelby Foundry Co., Shelby, N. C., has awarded contract to O. C. Connor, Shelby, for the erection of a new one-story building, 40 x 100 ft., to be equipped for the most part for the production of gear blanks, etc. The company is operating a plant on North Lafayette Street and will remove to the new location. Thomas J. Babington is head.

The City Council, Hagerstown, Md., will install an electrically operated pumping plant in connection with a new municipal waterworks and system, estimated to cost $1,000,000.

The Battey Machinery Co., Rome, Ga., has inquiries out for two electric motors, 10 and 40 hp., respectively, complete with base, pulley and starter.

The Sandy Ridge Coal Co., Big Stone Gap, Va., recently formed with a capital of $350,000, is planning for the installation of electrical and mechanical equipment at its local properties. James W. Gerow is president, and R. T. Irvine, secretary.

V. I. Spurgeon, Gaffney, S. C., has been awarded contract covering about $150,000 for the erection of a three-story high school at Gaffney. Equipment will be installed in the manual training department.

New England

BOSTON, July 16.

MACHINE tool dealers in this section made a poor showing the first half of this month, but prices have held remarkably well in the face of adverse business conditions. The past week saw improvement in prospects, although spotty. It is not anticipated that much business will be booked this month, but the trade looks for a betterment in August and further gains thereafter.

Something like $11,000,000 has been appropriated by the city of Boston for schools and equipment. The Massachusetts Legislature has authorized the expenditure of about half this sum within the next two years and the school authorities will shortly map out an expansion and equipment program.

Although not general, New England machine tool builders report improved business from other sections of the country since July 1. A Worcester builder has booked approximately $100,000 in orders. Stress is placed on the fact that under existing immigration laws the cost of labor must remain high and the supply small. High wages stimulate a demand for labor-saving machinery, and machine tools play an important part in their manufacture. The automotive and allied industries are believed to be tooled up for the remainder of 1923 production, but more intensive and economic machining operations will be necessary in 1924, which should begin to make itself felt in machine tool circles within a short time.

New England's textile machinery industry, which slowed up recently, gives promise of the greatest year on record in 1924. Her package machinery builders are well occupied, more so than a year ago, and constantly growing more active. The development of electric power plants, because of her position with regard to coal mines, necessarily must expand tremendously, which means continued activity in the electrical equipment field. Railroad equipment buying is not expected to expand very much, due to the financial condition of New England's carriers, yet railroad shop equipment makers are optimistic regarding the outlook in other sections of the country. Mine equipment makers are busy and practically assured continued prosperity well into 1924. Foundry equipment builders should steadily benefit from the growing scarcity of molders. In fact, machine tool builders are looking forward to good business from all producers of labor-saving machinery.

The Wachusett Nail Corporation, Hubbardston, Mass., wire nails, has incorporated. A new and larger works has been purchased and the company has tentative plans for additional equipment. Roscoe W. Wilbur is manager.

A permit has been granted the Bird Machine Co., South Walpole, Mass., to erect a one-story, 80 x 140-ft. machine shop.

The Charles T. Tenney Co., Boston, manager of electric power companies, has tentative plans for a power house at Salem, Mass., similar to the one being constructed by the Edison Electric Illuminating Co. at Weymouth, on a 10-acre water front recently purchased. Cranes and machine shop equipment will be required.

The William A. Hardy & Sons Co., Water Street, Fitchburg, Mass., has awarded the contract for a one-story, 50 x 50-ft. brass foundry.

Steps have been taken by the Boston Gear Works, 256 Franklin Street, Boston, for the erection on Holmes Street, Quincy, Mass., of a two-story, 75 x 100-ft. addition.

The Wood Worsted Mills, Lawrence, Mass., a subsidiary of the American Woolen Co., Boston, is erecting an addition to its boiler plant.

Beggs & Cobb, Winchester, Mass., leather manufacturers, have let a contract for the erection of a new power plant. Edward C. Brown, 220 Devonshire Street, Boston, is the engineer.

Coal handling equipment is required by the Consolidated Coal Co., New York, for improvements being made at its Portsmouth, N. H., property.

The International Silver Co., Meriden, Conn., is making extensive changes in the Colt Patent Fire Arms Mfg. Co. plant, recently acquired. The building is one-story, 80 x 200 ft., in which will be installed rolling mill equipment. A new unit for the production of castings will be erected.

The Oakville Co., Waterbury, Conn., manufacturer of pins, metal clips, etc., is having plans drawn for an addition. Lockwood, Greene & Co., 24 Federal Street, Boston, are architects and engineers.

The United Electric Co., State Street, Springfield, Mass., will commence the erection of a one-story and basement power house, 40 x 70 ft., at East Springfield, to cost $45,000. McClintock & Craig, 33 Lyman Street, are architects and engineers.

The H. B. Church Truck Service Co., 26 Reading Street, Roxbury, Boston, is planning for the installation of a power winch and quantity of small tools, including reamers, drills, taps, etc.

The Hall Pipe Organ Co., West Haven, Conn., has acquired a building at Kenyonville, Conn., which will be remodeled for a branch plant for the manufacture of parts. Henry Hall heads the company.

The United Illuminating Co., New Haven, Conn., will make extensions and install additional equipment at its power plant on Grand Avenue, to cost approximately $40,000.

The Walker-Stewart Foundry Co., Summer Street, Southington, Conn., is planning the erection of a new two-story plant to cost $50,000, including equipment.

The Great Northern Paper Co., Madison, Me., will make extensions in its plant and install grinding and other machinery. Improvements will also be made in the present mill.

The Dedham & Hyde Park Gas & Electric Light Co., Dedham, Mass., has made application to issue stock for $50,000, the proceeds to be used for extensions and improvements.

The New York, New Haven & Hartford Railroad Co., New Haven, Conn., has awarded a general contract to the H. Wales Lines Co., Meriden, Conn., for a new engine house, 100 x 105 ft., with repair facilities, at East Hartford, Conn.

Fire, June 29, destroyed a portion of the plant of the Central Maine Power Co., Bath, Me., with loss estimated at $20,000. It will be rebuilt.

The Merrimac Clay Products Co., 53 State Street, Boston, has awarded a general contract to the L. H. Shattuck Co., Manchester, N. H., for its new plant at Plaistow, N. H., to cost $250,000. A machine shop and power house will be built. H. and J. R. Raeder, address noted, are architects.

A manual training department will be installed in the new Morgan Gardner Bulkeley high school to be erected on Maple Avenue, Hartford, Conn., estimated to cost $1,500,000, for which bids are being received on a general contract until Aug. 21. Edward T. Wiley, 983 Main Street, is architect.

Buffalo

BUFFALO, July 16.

TENTATIVE plans are under consideration by the Dahlstrom Metallic Door Co., East Second Street and Buffalo Avenue, Jamestown, N. Y., for a three-story addition to cost $60,000.

The Buffalo-Newton Rifle Corporation, Buffalo, recently organized with a capital of $25,000, will take over and expand the business of the Newton Arms Co., 7 Brewster Street, with plants on Niagara Street and East Jewett Avenue. The new company is headed by C. Newton, D. A. Evans and A. H. Dayton.

William Roehlen, 39 Water Street, Rochester, N. Y., has plans for a one-story machine shop, 45 x 100 ft., at St. Paul and Marietta Streets, estimated to cost $22,000. Leon Stern, 1017 Commerce Building, is architect.

Whistler & Schanland, 1283 Niagara Street, Buffalo, manufacturer of tools, dies, etc., are planning for the installation of a power press.

John Klein, Buffalo, will build a two-story machine and repair shop at 575-89 Tonawanda Street, and will have plans prepared at once.

Fire, July 9, destroyed a portion of the shops of the New York Central Railroad Co., Depew, N. Y., with loss estimated at $50,000, largely confined to motors and other electric power equipment. It is planned to rebuild.

The Watson Truck Corporation, Canastota, N. Y., is planning for the installation of additional machinery for spoke turning and other service.

Bids will be called in the fall for the erection of a new high school at Hamburg, N. Y., with manual training department, estimated to cost $340,000, for which the Board of Education has authorized revised plans.

The Sherman Paper Co., Trust Building, Watertown, N. Y., has plans for a one-story addition, 80 x 100 ft., to its mill at Carthage, N. Y.

The Niagara, Lockport & Ontario Power Co., Lockport, N. Y., will commence surveys for a new hydroelectric generating plant on the Salmon River, near Altnar, Oswego County, to cost $1,000,000, including transmission system. The company recently sold a security issue of $3,000,000, to be used in part for expansion.

Plans have been filed by the Rome Wire Co., Rome, N. Y., for a one-story addition to its branch plant at 180 Clyde Street, Buffalo, 100 x 225 ft., to cost approximately $75,000.

Manual training equipment will be installed in the proposed high school to be erected at Sodus, N. Y., estimated to cost $200,000, for which plans are being prepared by M. Umbrecht, architect, Fayette Park Building, Syracuse, N. Y.

The Penn Yan Boat Co., Penn Yan, N. Y., has plans for two buildings, 80 x 120 ft. and 60 x 100 ft., respectively, estimated to cost $50,000, to replace its works recently destroyed by fire.

The Fuller Co., P. O. Box 125, Adams, N. Y., manufacturer of furniture, is planning for the installation of an electrically operated sanding machine and other equipment.

The C. A. Buffington Mfg. Co., Owego, N. Y., manufacturer of metal-bound folding chairs, etc., has awarded contract to the Austin Co., Cleveland, for a new one-story plant, 60 x 200 ft., estimated to cost $55,000.

B. A. Evans, Ogdensburg, N. Y., is planning for the installation of a lathe, drill press, bench tools and other equipment in a new machine and repair shop to be established at Gouverneur, N. Y.

Pittsburgh

PITTSBURGH, July 16.

THE local machine tool business is dull. Midsummer ordinarily is quiet and buyers are disposed to go slowly until the outlook for the future is clearer. The Pennsylvania Railroad, Southwestern region, recently put out a list of six tools for its Columbus, Ohio, shops. This business will probably be closed at St. Louis, but some local dealers are quoting. The Franklin, Pa., school board recently placed an order for three Sebastian lathes. The Westinghouse Electric & Mfg. Co. has closed for a 10 x 30-ft. Betts planer for its East Pittsburgh works and is understood to be slowly specifying against its Sharon list.

Crane business is slow, both in sales and inquiries, and mill equipment orders are few. It is said that practically none of the business in the latter line which had been figured upon, amounting to about $12,000,000, will be placed in the near future. Requests for appropriations for improvement at local plants of the Carnegie Steel Co. are said to have been turned down in New York.

A new one-story foundry, 80 x 150 ft., will be erected by the Acheson Mfg. Co., Rankin, Pa., manufacturer of steam fittings, etc., to replace the portion of its plant recently destroyed by fire. The company also has tentative plans for two other buildings, 100 x 150 ft. and 100 x 200 ft. respectively. The three structures are estimated to cost $150,000 with equipment. F. C. Robertshaw is in charge.

A manual training department will be installed in the new high school to be erected at Ferndale, near Johnstown, Pa., estimated to cost $150,000, for which revised plans are being prepared by J. E. Adams, architect. The board of Education, H. B. Schrock, 557 Ferndale Avenue, is in charge.

The West Penn Co., West Penn Building, Pittsburgh, operating electric power properties, a subsidiary of the American Water Works & Electric Co., New York, has arranged for an increase in capital from $31,000,000 to $50,000,000 and 500,000 shares of common stock, no par value, a portion of the proceeds to be used for extensions and improvements in electric plants and systems.

The Dravo Contracting Co., Diamond Bank Building, Pittsburgh, will build a new one-story structural shop, 75 x 275 ft., at its shipbuilding plant at Neville Island, estimated to cost $75,000 with equipment.

The Ohio River Edison Co., recently organized under Delaware laws as an interest of the Pennsylvania-Ohio Power & Light Co., Sharon, Pa., is perfecting plans for a new steam-operated electric power house on the Ohio River, near Toronto, Ohio, with capacity of 100,000 hp. With steel tower transmission system it is estimated to cost $10,000,000. Later it is purposed to increase the output to 400,000 hp. Another subsidiary has been organized by the Pennsylvania-Ohio company to be known as the North-East Coal Co., which will purchase about 8000 acres in Jefferson County, Ohio, for coal supply for the new generating plant. It is proposed to install a complete mining plant with electrically-operated machinery.

The Penn-American Refining Co., Rouseville, near Oil City, Pa., has commenced rebuilding the portion of its oil refinery recently destroyed by fire with loss of about $150,000.

The West Virginia Water & Electric Co., Charleston, W. Va., is planning the installation of centrifugal pumping equipment at its plant in the South Hills section. C. S. Dawson is general manager.

The Board of Education, Pittsburgh, is said to be arranging for the early purchase of machine tools and other equipment for the manual training department at the Westinghouse High School.

Manual training equipment will be installed in the three-story high school to be erected by the Union High School District, Dunbar, W. Va., estimated to cost $90,000. Walter F. Martens, Charleston, W. Va., is architect.

The American Sheet Glass Co., Clarksburg, W. Va., recently organized with a capital of $250,000, has acquired a site for a new plant, estimated to cost $150,000 with machinery, and will have plans drawn at once. It will include a power house. P. M. Robinson heads the company.

The Cataract Smokeless Coal Co., Bachman, W. Va., recently organized with a capital of $250,000, is planning the installation of electrical and mechanical equipment at coal properties in this section. Herbert R. Smith and Medford J. Brown are heads.

A manual training department will be installed in the new two-story and basement high school to be erected at Bradford, Pa., estimated to cost $200,000, for which the Board of Education will soon select an architect.

The North, West and South Shenango Township Light & Power companies, Shenango, Pa., have been chartered under State laws to install and operate electric power plants and systems in the respective districts. A. A. Culbertson, Erie, Pa., is treasurer of the companies.

The Red Jacket Coal Co., Charleston, W. Va., has plans for a new four-track coal tipple at its properties on Mate Creek, Thacker coal field. W. M. Ritter, chairman of the board of the W. M. Ritter Lumber Co., Charleston, heads the company.

The Beaver Falls Art Tile Co., Beaver Falls, Pa., has awarded contract to the Farris Engineering Co., Empire Building, Pittsburgh, for a four-story addition, 175 x 300 ft., to cost $85,000 with machinery.

The Dun Glen Coal Co., Glen Jean, W. Va., recently organized with a capital of $500,000, is planning for the installation of electrical and mechanical equipment on properties acquired in this section. C. P. Galloway and Charles Ash, both of Glen Jean, are heads.

Detroit

DETROIT, July 16.

JOHNSON BROTHERS, Ferrysburg, Mich., are planning the erection of a one-story addition to their boiler and plate works, to provide about 7500 sq. ft. of additional floor area.

The Gem Foundry Co., 271 West Western Avenue, Muskegon, Mich., is having plans drawn for a new one-story branch foundry, 60 x 100 ft., at Hart, Mich. E. N. Vanderwest, Montgomery Block, Muskegon, is architect. Henry J. Pangburn is general manager.

The Special Furniture Co., Grand Rapids, Mich., has tentative plans for rebuilding the portion of its plant destroyed by fire July 4, with loss estimated at $100,000 including machinery.

The Monroe Board & Lining Co., Monroe, Mich., manufacturer of paper products, has acquired the local plant of the Republic Glass Co., and will remodel the structure for new works. It is proposed to remove the present factory at Barberton, Ohio, and concentrate production. The company has acquired the plant and business of the Lignistra Fibre Co., Barberton, and will operate as a subsidiary. It will be extended and additional equipment installed. William Gutmann is president.

The J. Heddon's Sons Co., Dowagiac, Mich., operating a general machine shop, is planning for the installation of an automatic milling machine, Brown & Sharpe type.

The Timken-Detroit Axle Co., Waterloo Avenue and the Belt Line Railway, Detroit, has acquired the plant and property of the Standard Equipment Co., Lorain Avenue and West 106th Street, Cleveland, manufacturer of automobile parts, for a new branch plant.

The Spaulding Electric Co., 1344 Michigan Avenue, Detroit, manufacturer of electrical equipment, will commence the erection of a one-story addition, estimated to cost $15,000 exclusive of equipment.

The Anchor Concrete Machinery Co., Adrian, Mich., has plans for the construction of a one-story addition, 60 x 65 ft. Eugene P. Olson is general manager.

The Westcott Engineering Co., 111 West Washington Street, Chicago, structural engineer, has plans for a new two-story mechanical works, 150 x 230 ft., at Ludington, Mich., to cost $75,000, for a company whose name is temporarily withheld.

The Lincoln Mfg. Co., 2630 Erskine Street, Detroit, operating a metal stamping and spinning plant, is planning the installation of a toggle drawing press, Bliss type, second-hand.

The Tamarack Mining Co., Calumet, Mich., is planning the installation of three electrically operated pumping units each with capacity of 350 gal. per min., with motors and auxiliary equipment.

The Detroit Insulated Wire Co., 4561 Wesson Street, Detroit, will commence the erection of a new one-story plant at 6000 Vigo Street, estimated to cost $45,000, including equipment.

The Truck Parts & Foundry Co., Alma, Mich., has arranged for the removal of its plant to a building formerly occupied by the Alma Creamery Co., which will be extended for increased production.

Chicago

CHICAGO, July 16.

THE machine tool market is quiet in all departments. There have been a few more inquiries from industrial companies the past week, but no orders to speak of. No further railroad buying has developed, but considerable business is pending and the Illinois Central has put out a few new inquiries, including a 500-lb. power hammer, a 32-in. shaper, and a 20-in. and a 42-in. drill press. The Elgin, Joliet & Eastern, which was expected to close against its list this week, has asked for revised quotations. The American Steel & Wire Co. is in the market for a 72-in. boring and turning mill for its Anderson, Ind., plant.

Prices are unchanged, but machine tool builders are showing greater flexibility in quoting on new business.

The Chicago Steel & Wire Co., Chicago, has acquired a tract, 193 x 300 ft., on the east side of Torrence Avenue, 610 ft. north of 103rd Street, immediately adjoining its present plant, and will start work immediately on a three-year building program. One one-story factory to cover the entire lot, involving an expenditure, together with equipment, of $500,000, will be erected in three units.

Dubin & Eisenberg, 14 West Washington Street, Chicago, have taken bids on a one-story addition, 50 x 106 ft., to a factory at 5841-43 South Loomis Street, for the People's Metal & Iron Co. The cost is $15,000.

The American Linseed Co., 2225 South Lincoln Street, Chicago, has let contract for a plant, 70 x 112 ft., and alterations, at 2225 Lumber Street, to cost $95,500.

Mojonnier Brothers, manufacturers of dairy machinery, Milwaukee, and 739 West Jackson Boulevard, Chicago, have let contract for a one-story factory, 124 x 202 ft., at 4607-23 West Ohio Street, to cost $45,000.

The Niehoff Corporation, recently organized, has leased a plant at 224 West Illinois Street, 40 x 100 ft., and will manufacture growlers, magnetizers, coil springs, bridges, platinum and tungsten contacts. The equipment used will include three engine lathes of one type and eight lathes of another type, five punch presses, three spinners, one screw machine and milling machines, shapers and bench lathes. Officers are P. G. Niehoff, president; Wilson Compton, vice-president, and E. A. Harrington, secretary and treasurer.

The Jones, MacNeal & Camp Mfg. Co., Otis Building, Chicago, recently incorporated, has a plant at Warsaw, Ind.,

and will manufacture electric steel drills and portable drill stands. Officers are Kenneth MacNeal, president, and G. W. Wilson, vice-president.

The Universal Tamping Machinery Co., Inc., Peoria, Ill., recently formed with $50,000 capital stock, is a reorganization of the partnership known as the Universal Concrete Machinery Co. The company will continue to build concrete block and brick-making machinery, steel block and brick cars and jigging machines. It has just purchased some additional machinery and does not expect to be in the market again for some time. Officers are C. S. Emert, president and treasurer; B. G. Lange, vice-president, and W. H. Janssen, secretary.

The sheet metal plant of G. O. Morton, located in the Woodward Governor Co. building, Rockford, Ill., has been sold to V. B. and V. L. Parker, who will operate it under the name of the Parker Brothers Co.

The Studebaker Corporation has started work on a foundry, 683 x 722 ft., a car storage building and crane shed, 59 x 76 x 364 ft., and an addition to the power plant, 68 x 89 x 90 ft., at South Bend, Ind.

The Federal Mfg. Co., brass finisher, Columbus, Ohio, has purchased 17 acres near Holland, Mich., and will erect a one-story plant, 180 x 300 ft.

A power house to cost $100,000 will be erected at the State Industrial School for Boys, Lansing, Mich.

Within a month the capacity of the cold rivet department of the Champion Rivet Co., at East Chicago, Ind., will be doubled. More than $60,000 has been expended to enlarge the plant.

The S. Ward Hamilton Co., manufacturer of metal specialties, Harvey, Ill., has had plans prepared for a one-story addition, 90 x 170 ft., to cost $60,000.

The Davison Machine Shop, Shelbyville, Ind., has purchased a building at 39 East Jackson Street, which will be remodeled for occupancy within 30 days.

The Charter Gas Engine Co., Sterling, Ill., is considering plans for a one-story and basement addition. W. A. Robinson is president.

Manual training equipment will be installed in the proposed high school to be erected at Brainerd, Minn., estimated to cost $250,000, for which an architect will soon be selected to prepare plans.

The Federal Ice Refrigerating Co., 112 West Adams Street, Chicago, is considering plans for the erection of new works at Mason City, Ill. H. V. Norwelle is president.

The Southern Illinois Light & Power Co., St. Louis, has acquired the municipal light and power plant at Ava, Ill., and will furnish service in this section. Extensions are planned, including transmission line construction.

The Crystal Ice Co., Havana, Ill., has tentative plans for a one-story plant, estimated to cost $40,000. G. H. Radcliffe is one of the heads of the company.

Manual training equipment will be installed in the new two-story and basement high school to be erected at Boone, Iowa, estimated to cost $155,000, for which bids are being asked on a general contract until July 20. Dougher, Rich & Woodburn, Valley National Bank Building, Des Moines, Iowa, are architects.

The Lincoln Stove Repair Co., 205 South Tenth Street, Lincoln, Neb., O. J. Allison, head, has plans for a one-story and basement works, 100 x 140 ft., estimated to cost $65,000.

The Illinois Central Railroad Co., 135 East Eleventh Place, Chicago, will have plans prepared for extensions and improvements in its locomotive repair shops and yards at Council Bluffs, Iowa, to cost $500,000 including machinery. New coal chutes will be constructed and automatic conveyors installed. Later a new 18-stall engine house, with repair department and 100-ft. turntable, will be erected.

The Russell, Burdsall & Ward Bolt & Nut Co., Rock Falls, Ill., has tentative plans for a two-story building, 100 x 170 ft., the greater part to be used as a machine shop. Headquarters of the company are at Port Chester, N. Y.

F. K. North, 1801 Diversey Parkway, Chicago, is inquiring for a Warner & Swasey gate valve seating machine.

The Illinois Malleable Iron Co., 1801 Diversey Parkway, Chicago, is inquiring for one 15-ton, 8-wheel steam locomotive crane with at least a 50-ft. boom.

Indiana

INDIANAPOLIS, July 16.

PLANS are being prepared by the Whiting Foundry Equipment Co., Whiting, Ind., for a one-story addition, to cost in excess of $35,000. L. G. Hallberg, 116 South Michigan Avenue, Chicago, is architect and engineer.

The Citizens Gas Co., Indianapolis, will have plans drawn for rebuilding its benzol by-products plant, destroyed by fire July 8 with loss reported at $200,000, including machinery. The new structure will cost approximately a like amount. John R. Welch is president.

F. J. Gardner, 622 Wagner Street, Fort Wayne, Ind., has inquiries out for sectional steel buildings and is desirous of reaching manufacturers of structures of this character.

Electric, steam power and other equipment will be installed in the new three-story and basement addition to be erected by the Progress Laundry Co., 420 East Market Street, Indianapolis, estimated to cost $115,000. Russel E. Edwards, 45 Union Trust Building, is architect.

The Bastian-Morley Co., La Porte, Ind., manufacturer of boilers, heaters, etc., is planning the erection of a two-story addition, estimated to cost $45,000 including equipment.

The Indiana General Service Co., Marion, Ind., has plans for extensions in its local generating plant and the installatio of a new 10,000 kw. turbo-generator and auxiliary machinery. A new electric substation will be built at West Marion and extensions made in transmission system. The project will involve close to $1,000,000, including machinery.

The La Salle Paper Co., South Bend, Ind., has plans for the erection of a new unit, estimated to cost $300,000 with machinery.

The Hoosier Universal Machinery Co., Goshen, Ind., has been organized to take over and expand the plant and business of the Hoosier Drilling Machine Co. The production of drilling machines and vises will be continued, with the addition of departments for the manufacture of universal joints, and industrial trucks and parts, the latter to be known as the Hoosier Factory Truck.

The National Handle Co., Fort Wayne, Ind., will commence the erection of the first unit of its proposed plant on Erie Street, to include a power house estimated to cost $100,000 with quipment. Other buildings will be erected later.

The Interstate Public Service Co., Columbus, Ind., will make extensions in its plant and system and install additional equipment.

Frank F. Robinson, Indianapolis, has perfected plans for the establishment of a new welding and general metal repair works at 3713 Massachusetts Avenue.

Milwaukee

MILWAUKEE, July 16.

ONE feature of the machine-tool business, which is expected to help keep trade active the remainder of the year, is the reinstatement of several important undertakings and the projection of new ones in Milwaukee and throughout Wisconsin, which have been in abeyance for about six months to await the outcome of a program of radical taxation in the Wisconsin Legislature, now at an end. In many cases inquiries have been before dealers and manufacturers for some time past, but prospects are for early closing of purchases. So far as demand for tools from other sections of the country is concerned, business placed in this market is of small proportions, although generally in excess of the same time last year.

The Belle City Malleable Iron Co., Racine, Wis., which is executing a plant replacement and enlargement project involving $800,000 in all, has decided to proceed with the construction of the new foundry, as originally planned. It has now been decided to erect one-half of the building this year, adding the other half next year. It will be 115 x 360 ft., duplicating the present melting capacity. Investigation is being made to determine if it will be possible to complete work before Dec. 1 on a contemplated structure, 150 ft. long, to connect a new annealng shop, erected during the past year, with the shipping room. Nelson & Co., general contractors, Racine, are in charge of construction of the entire project. C. S. Anderson is general manager of the Belle City company.

The city of Milwaukee expects to ask bids before Aug. 1 for coal and ash handling equipment for the steam generating unit of the new Riverside Pumping Station. While no official estimates have been issued, it is expected that this equipment will cost in the neighborhood of $75,000. R. E. Stoelting is commissioner of public works.

The Simmons Co., New York, which now has under construction at the main factory in Kenosha, Wis., a seven-story building for the manufacture of a new line of steel chamber, hotel and office furniture, finished in exact duplication of the wood product, to supplement its line of steel beds, is contemplating the establishment of its own glass works for the production of mirrors, castors, etc. No intimation has

been given with respect to the location of the new unit. Milton H. Pettit is vice-president in charge of the operation of the Kenosha works.

The Riverview Foundry Co., Silver Lake, near Kenosha, Wis., suffered the total destruction of its stove and range foundry and machine shop by fire caused by lightning on July 10. The loss of $55,000 is offset by $19,000 of insurance. The industry will be rehabilitated, but it has not been decided if the present site will be utilized.

The Curtis Automobile Co., 143 Eighth Street, Milwaukee, has engaged the Federal Engineering Co., 444 Milwaukee Street, local, to design and construct a new garage and maintenance building, three stories and basement, 100 x 130 ft., at Broadway and Martin Streets. It will cost about $125,000 and require much new shop equipment, fixtures, etc. Work will begin about Aug. 1. Frank Olson is vice-president and treasurer.

The city of North Milwaukee, Wis., at a special election, voted to issue bonds in the sum of $125,000 for the erection and equipment of a new high school with vocational training facilities. Van Ryn & DeGelleke, architects, 114 Grand Avenue, Milwaukee, are preparing plans. E. T. Neumann, 439 Thirty-sixth Street, North Milwaukee, is secretary of the board of education.

The Stevens Point Brick Mfg. Co., Stevens Point, Wis., intends to start work immediately on the reconstruction and equipment of its brick, tile and general clay products plant, destroyed by fire July 9 with an estimated loss of $35,000. Nearly all the machinery will require replacement. Joseph Kuchnowski is president and manager.

J. U. Schmidt, Prairie du Sac., Wis., is buying a few new and used tools for a garage and machine shop now under construction on the site of his machine shop and smithy.

The Board of Education, Ladysmith, Wis., has let contracts for the erection of an addition to the high school, to be used for vocational training departments. It will cost about $80,000 including equipment. L. E. Streator is secretary of the board.

The Northern Boiler & Structural Iron Works, Appleton, Wis., has started work on a new fabricating shop, 60 x 100 ft., over the present frame building, to be dismantled later. Inquiry is being made for one 10-ton electric and one 5-ton hand-operated crane. Additions to the air compressor room and power plant were completed last fall and all equipment has been installed. William H. Timme is president.

The Board of Public Works, South Milwaukee, Wis., is taking bids for the construction and equipment of a sewage disposal plant, estimated to cost $35,000, and designed by Alvord, Burdick & Hawson, consulting engineers, 8 South Dearborn Street, Chicago.

The American Skein & Foundry Co., Racine, Wis., is erecting an addition to its gray iron shop and will install an additional cupola. With other equipment the improvement will cost about $50,000.

The United States Engineer Office, Federal Building, Milwaukee, is taking bids for furnishing two 1-yd. clamshell buckets and two horizontal duplex piston steam pumps.

The Chisholm-Scott Viner Co., Columbus, Wis., organized some time ago to manufacture special machinery for removing peas from vines for canning factories, plans to start work shortly on the erection and equipment of a machine and assembling shop, estimated to cost $50,000.

Cleveland

CLEVELAND, July 16.

SOME new inquiry for machine tools has come from the railroads. The Pennsylvania has an inquiry out for a 5 and 6-ft. radial drill for its Philadelphia shops and a 7-ft. radial drill, a 42-in. vertical turret lathe, and a 21-in. drilling machine for its St. Louis shops. The New York Central has sent out a tentative list of eight machines on which it has asked for approximate prices. A few new small lot inquiries have come from Detroit automobile companies. Machine tool builders do not expect much business from this source during the summer, but look for considerable demand in the fall, should conditions continue good in the automobile industry.

Sales during the week were light. The Elwell-Parker Electric Co., Cleveland, purchased a straight side Toledo press of 50 tons capacity and a Cincinnati milling machine. The Bowdil Co., Bowdil, Ohio, maker of mining tools, purchased six used machines. A local manufacturer of multiple spindle automatic screw machinery reports an improvement in orders and inquiries over June.

The City Car Co., Kenton, Ohio, a subsidiary of the Chicago Poultry Transit Co., has completed and placed in operation a plant for car repair work.

The Superior Motor Coach Co., Lima, Ohio, recently organized, is placing a new plant in operation for the manufacture of bodies for motor cars.

A company is being organized in Sabina, Ohio, for the manufacture of electric washing machines, and expects to begin operation shortly. R. M. Allen is president and George L. Wilson, secretary.

The Massillon Clay Products Co., Massillon, Ohio, has been organized with a capital stock of $125,000 by Walter T. Smith, Edward M. Ertle and others, and will erect a plant for the manufacture of brick.

The Ohio Gear & Machine Co., Kenmore, Ohio, an Akron suburb, has established a plant for the manufacture of gears and mechanical molds.

Cincinnati

CINCINNATI, July 16.

THE larger manufacturers are placing orders in fair numbers, more particularly the General Electric Co. and the Westinghouse Electric & Mfg. Co., both of which were purchasers in this market last week. Railroad orders are also coming to this city in fair numbers, the Denver & Rio Grande Western Railroad having placed a large number here within the past 10 days. Scattered buying from other railroads is also reported, including the Norfolk & Western. Drilling machine manufacturers report a surprising demand for upright drills from the automotive industry the past two weeks, but radial drills are moving slowly.

Inquiry is still generally confined to one and two machines to replace wornout equipment, or to round out present production machinery, and while inquiries continue in fairly large numbers, more difficulty is being experienced in closing deals. Some shops have now about caught up with orders, and a small number of men have been laid off by some manufacturers the past week.

The Hamilton Car Co., Newark, Ohio, will build a new forge shop to replace the one recently destroyed by fire. It also has plans for extensions to increase its output from two to five cars per day. At present the company is engaged in repairing cars. William Hamilton is president.

The foundry and machine shop building of the Bevis & Shartle Machine Co., Middletown, Ohio, has been completed. The company does a general machine shop business, and is headed by Gay Bevis.

The Clark Grave Vault Co., Columbus, Ohio, has awarded contract for an addition, 100 x 160 ft. Considerable metal-working machinery will be installed. A. F. Beck is president.

The Cincinnati Enameling Co., Cincinnati, has been incorporated with a capitalization of $50,000. It will do general vitreous enameling jobbing work, and will also engage in the production of sheet metal specialties. The plant will be located at Elmore and Miller Streets. Robert Heuck, formerly of the Cincinnati sales office of the Republic Iron & Steel Co., is president of the company, and H. E. Johnson, formerly with the Cleveland Metal Products Co. and the Mansfield Vitreous Enamel Co., is general manager.

The Gulf States

BIRMINGHAM, July 16.

A NEW oil refinery will be built by the Humble Pipe Line Co., an interest of the Humble Oil & Refining Co., Houston, Tex., near Hearne, Tex., to be equipped for an initial output of 35 cars a day. It will cost in excess of $200,000.

The Eastern Texas Electric Co., Port Arthur, Tex., has plans for a three-story addition to its power house at Riverside Drive and Houston Avenue, estimated to cost $135,000 with equipment. The company will also build a steel tower transmission line to Beaumont, Tex., to cost $250,000. Stone & Webster, Inc., 147 Milk Street, Boston, is engineer.

The Magnolia Petroleum Co., Dallas, Tex., has acquired the plant and property of the Kansas-Gulf Oil Co., in the Northwest and Burkburnett fields, near Wichita Falls, Tex., for $1,250,000. The purchase includes a gasoline refining plant with daily output of 5500 gal. Plans are under way for extensions and the installation of additional equipment.

The United States Gypsum Co., 205 West Monroe Street,

Chicago, will commence the erection of a new plant in the vicinity of Sweetwater, Tex., on site lately acquired for the production of gypsum products. It will include a power house and machine shop. The estimated cost is placed at $1,000,000, including machinery. G. W. Rathgens, assistant engineer of the company, will be in charge of construction.

The Equitable Equipment Co., Whitney Building, New Orleans, machinery dealer, has inquiries out for an engine-generator set, 150 to 200 kw. capacity.

Electric power, conveying machinery and other equipment will be installed in the new elevator to be erected by the Smith Brothers Grain Co., Sixth and Pecan Streets, Fort Worth, Tex., to have a daily capacity of 125,000 bu., estimated to cost $110,000. Bids will soon be called.

The Western Public Service Co., Colorado Springs, Colo., has purchased the plant and system of the Calvert Water, Ice & Electric Co., Calvert, Tex., with main power plant at Hearne, Tex. The new owner will make extensions, including the installation of additional equipment and transmission lines. Paul Freeman is division superintendent in charge.

The Standard Equipment Co., Birmingham, machinery dealer, has inquiries out for the following equipment: One electric locomotive crane, 20 tons capacity; three electrically operated air compressors; about 5 miles of portable track, 16 to 25-lb. rails; three double-drum hoisting engines, five steel guy derricks, each 15 to 25 tons capacity; two electrically operated shovels, each about 1½ yd. capacity; one revolving gasoline-engine shovel on crawlers; two portable gas compressors; 50 all-steel, two-way dump cars, and 30 double dump contractors' cars; five electric hoists, three large gyratory crushers, and three large jaw crushers, with elevators and screens; all used equipment.

The Leaksville Veneer & Lumber Co., Leaksville, Miss., recently organized with capital of $750,000, has plans for a new mill, with power house, estimated to cost $90,000 with equipment. Max Bryant, Leaksville, will head the new company; Jefferson Griffith, Beaumont, Miss., is also interested.

The Florida Machine Works, 40 Riverside Avenue, Jacksonville, Fla., has plans for a new one-story electric steel foundry at Church Street and the Seaboard Air Line Railroad, estimated to cost $50,000. F. G. Russell is president and general manager.

The Crystal Salt Co., Pierce Junction, near Houston, Tex., has commenced the erection of the first unit of a new refinery. Another plant unit will be built later. Electric power and mechanical equipment will be installed.

The West Texas Utilities Co., Abilene, Tex., is planning for the electrification of the railroad line from Roby, Tex., to North Roby and vicinity, recently acquired, and will make equipment purchases at an early date.

The Electrolock Mfg. Co., Inc., Grove and Washington Streets, Vicksburg, Miss., recently organized, will operate an assembling plant for the manufacture of special locking devices. It has contracted with Gustave Lidseen, 832 South Central Avenue, Chicago, general machinist, for the production of dies and steel parts, and with the Cutler-Hammer Mfg. Co., Milwaukee, for the manufacture of electrical parts. Later, it is proposed to establish a plant for parts production. W. Hemingway, Jr., heads the company.

The Southwestern Traction Co., Temple, Tex., has plans for a new one-story car repair and machine shop, 75 x 150 ft., with car barn adjoining. W. G. Haag is engineer.

The Board of School Trustees, Goshen, Ala., is arranging for the installation of a manual training department in a proposed school, for which plans will be prepared at an early date.

F. W. Grogan, Spur, Tex., and associates, have acquired the electric light and power plant at Pampa, Tex. Plans are being arranged for extensions and the installation of additional equipment.

The New Orleans Corrugated Box Co., New Orleans, has been organized to take over the Union Paper Products Co., Inc., and the New Orleans Corrugated Fibre Box Co., with capital of $500,000. The local plants will be continued in operation and extensions made for increase in production. Samuel Ohnstein is president and general manager.

J. W. Tuberville and George W. Covington, Hazelhurst, Miss., have acquired the plant and property of the Mississippi Cotton Oil Co., Jackson, Miss. The new owners propose to reorganize the company, extend the plant and install additional equipment.

Manual training equipment will be installed in the high school to be erected at Vernon, Tex., for which a bond issue of $110,000 is being arranged. The Board of Education is in charge.

The Texas & Pacific Railroad Co., Texas & Pacific Building, Dallas, Tex., is planning the construction of new locomotive and car shops in connection with a new yard at Fort Worth, Tex., estimated to cost $500,000 with machinery. E. F. Mitchell, address noted, is chief engineer.

The Lone Star Gas Co., Eastland, Tex., will commence the construction of its gasoline refinery on property recently acquired near Gordon, Tex., to cost close to $500,000 with machinery. It will also build new pumping plants in the Ranger, Eastland and Desdemona oil fields, estimated to cost $250,000, including equipment.

The Coggins Marble Co., Canton, Ga., wants to purchase a steel tower and tank, the tower to be 50, 60, 75 or 80 ft. in height; the tank to be of 8000 to 20,000 gal. capacity.

The Alamo Iron Works, San Antonio, Tex., is in the market for a plate washer punching press, preferably of the horizontal type, to make wrought washers for ½, ⅝ and ¾-in. bolts.

The Williams Patent Crusher & Pulverizer Co., St. Louis, is inquiring for a second-hand No. 5 Mitts & Merrill hub keyseater, with or without motor attached.

The Central South

ST. LOUIS, July 16.

FIRE, July 9, destroyed a portion of the oil refinery of the Interstate Refineries, Inc., Kansas City, Mo., with loss estimated at $200,000, including machinery. It is planned to rebuild.

The Paducah Electric Co., Paducah, Ky., will break ground early in August for a new unit to provide for an ultimate capacity of 10,000 kw. The plant will be steam operated and additional mechanical coal-handling machinery will be installed. The estimated cost is placed at $375,000.

Manual training equipment will be installed in the new two-story and basement junior high school to be erected at Winchester, Ky., estimated to cost $100,000. R. M. Bates, Jr., Cammack-Watts Building, Huntington, W. Va., is architect.

The Common Council, Pine Bluff, Ark., is planning for the installation of electrically operated pumping machinery in connection with extensions and improvements in the municipal water works. A 60,000-gal. tank on 25-ft. tower will also be installed. Fred Bennett, Citizens' Bank Building, is engineer.

The State Highway Commission, St. Louis, is considering plans for a State-owned cement manufacturing works, estimated to cost $250,000 with machinery. It is proposed to ask for prices on buildings and equipment at an early date.

The Stekel-Lanteman Motor Co., Ellinwood, Kan., is planning for the installation of a lathe, drill press and other equipment.

The St. Louis & San Francisco Railroad Co., 900 Olive Street, St. Louis, has awarded general contract to T. S. Leake & Co., 608 South Dearborn Street, Chicago, for its new car and locomotive shops on Fyler Avenue, to cost approximately $500,000 including machinery. J. G. Jonah is chief engineer.

The Missouri Utilities Co., Mexico, Mo., has tentative plans for extensions in its electric generating plant to consist of a new turbo-generator and auxiliary machinery, with additions in transmission system, estimated to cost $100,000. Negotiations are under way for the purchase of the power plant at Warrenton, Mo., and the station will be extended and additional transmission lines built.

The Kentucky Utilities Co., M. E. Taylor Building, Louisville, has preliminary plans for a new ice manufacturing plant at Lancaster, Ky., estimated to cost $60,000. G. Bogard is company engineer.

The Board of Trustees, Trenton School District, Trenton, Mo., will install a manual training department in its new local high school, estimated to cost $130,000, for which foundations will be laid at once. R. H. Sanneman, Kansas City, Mo., is architect.

The Chickasha Gas & Electric Co., Chickasha, Okla., has acquired the municipal power plant at Minco, Okla., and plans for extensions and the construction of a new transmission line. F. D. Shaffer is general manager

The Oklahoma Power Co., Oklahoma City, Okla., has purchased a power site in the Kiamichi Mountains, near Antlers, Okla., and will use it later for a large hydroelectric generating plant. Work is in progress on extensions and improvements in the power plant at Antlers, recently acquired.

Manual training equipment will be installed in the three-story and basement high school to be erected at Perry, Okla., estimated to cost $130,000, for which work will be placed under way at once. Monett & Reid, Empire Building, Oklahoma City, Okla., are architects.

The Scranton Machine Shop, Great Bend, Kan., is planning the installation of a power lathe and other equipment.

An electrically operated pumping plant will be installed at Salina, Kan., by the Common Council, in connection with the installation of a new sewerage disposal works. C. A. Haskins, 517 Finance Building, Kansas City, Mo., is engineer.

The Common Council, Mangum, Okla., is planning for a bond issue, the proceeds to be used for extensions in the municipal electric power plant and the installation of additional equipment.

The Bartlesville Zinc Co., Bartlesville, Okla., has tentative plans for a new unit at its concentration plant, estimated to cost $40,000 including equipment.

The Dix River Power Co., Danville, Ky., has preliminary plans for a new hydroelectric power house on the Dix River, with initial capacity of 30,000 kw., estimated to cost $2,000,000, including a steel tower transmission line. The company is a subsidiary of the Middle West Utilities Co., 72 West Adams Street, Chicago.

The Louisville Gas & Electric Co., 311 West Chestnut Street, Louisville, has plans for a new electric power house at Third and Magazine Streets.

A two-story automobile machine shop and service building, 150 x 170 ft., for company trucks and cars, will be erected on Chouteau Avenue, St. Louis, by the Pevely Dairy Co., 1004 South Grand Boulevard, estimated to cost $100,000.

An electrically operated centrifugal pump, with 50-hp. motor and auxiliary equipment, will be installed by the Board of Water Works Improvement, Dequeen, Ark., in connection with extensions and improvements. W. L. Winters, Fort Smith, Ark., is engineer.

The Pacific Coast

SAN FRANCISCO, July 10.

PLANS are being prepared in the engineering department, Southern Pacific Railroad Co., Southern Pacific Building, San Francisco, for a new locomotive erecting shop at Los Angeles, 25 x 498 ft., estimated to cost $600,000, with machinery. The installation will include three traveling cranes, one of 25 tons capacity, and two of 15 tons each.

The Paramount Motors, Inc., Pomona, Cal., has tentative plans for a new works on the Nichols property, Ganesha Park section, for the manufacture of automobile equipment and parts.

The Fidelity Machine Co., Oakland, Cal., has construction under way on a new plant of the Foothill Boulevard and Stanley Road for the production of metal cores, molds, etc., for the manufacture of tires and mechanical rubber goods. The company was organized recently as a partnership by E. M. McCurry and M. H. Gregg.

The California-Hot Springs Co., Visalia, Cal., has preliminary plans for the construction of a hydroelectric power house to cost close to $100,000, with machinery. Joseph Mitchell is general manager.

The Domestic Trade Bureau, San Francisco Chamber of Commerce, Merchants Exchange Building, is in receipt of an inquiry (D-640) from a manufacturer of agricultural implements in the vicinity of Chicago, for the purchase of a local machine shop and foundry for the establishment of a Pacific Coast plant.

The Vaughn Electric Co., 4220 University Way, Seattle, is planning the installation of a plant in a building at 4240 University Way, for the manufacture of electric fixtures and equipment. The company recently acquired the property and business of the M. & M. Electric Co., Seattle, and is concluding negotiations for the purchase of the plant and equipment of the Sterling Electric Co., Tacoma, Wash. It is purposed to remove some of the latter machinery to the new Seattle works.

The Smoot-Holman Co., care of the Chamber of Commerce, Inglewood, Cal., is negotiating for a site for the erection of a new plant to manufacture automobile equipment and accessories. John Spangler is head.

The Merced Union High School District, Merced, Cal., has taken bids for new machine shops and manual training building at the local high school and will commence foundations at an early date. Allison & Allison, 1405 Hibernian Building, Los Angeles, are architects.

The McCorkle Mfg. Co., Oakland, Cal., manufacturer of gas furnaces, has arranged for the removal to its new plant at Adeline and Twentieth Streets, 100 x 165 ft., where additional equipment will be provided for increased output. D. H. McCorkle is president and S. W. Terry, secretary.

The Beaver Seal Jar Cap Co., Compton, Cal., is arranging for a stock issue of $100,000, the proceeds to be used for the construction of a new plant to manufacture glass jars, metal seals, caps, etc.

Fire, July 10, destroyed a portion of the refinery of the Gilmore Refining Co., Long Beach, Cal., with loss estimated at $175,000, including equipment. It is planned to rebuild.

At a special election, July 2, at Sacramento, Cal., approval was given for the construction and operation of a municipal electric light and power plant, and the creation of a municipal utility district. The proposed station will be of hydroelectric type, and with transmission system will cost $5,000,000.

The board of trustees, Union High School District, Huntington, Cal., is taking bids on a general contract for a one and two-story manual arts and training building at the local high school, 196 x 198 ft., estimated to cost $100,000 with equipment. Rea & Garstang, 905 Trust & Savings Building, Los Angeles, are architects.

Canada

TORONTO, July 16.

DEMAND for machine tools showed considerable improvement the past week, chiefly on account of orders placed by the Toronto Transportation Commission for 136 items for its new car shops under construction in Toronto. Some good business on smaller lists was also closed the past few days and buying in units of two or three is holding steady. The demand is not confined to any single industry, but is spread over practically all lines of manufacture. The automobile industry is a steady customer and is entering the market for tools for replacement purposes, and some fair sized lists also have been making their appearance on new works account.

Prospects of a record grain crop throughout the Canadian West is having a stimulating effect on the machinery and equipment market and is resulting in extensive expenditures on elevator account, a large number of which are under construction throughout the West and for which large sums will be spent on equipment.

The General Motors, Ltd., Oshawa, Ont., has taken out a permit for an addition to cost $155,000.

T. L. McLellan, manager of the town of Kenora, Ont., is in the market for electric light and power plant machinery and boilers.

The Toronto Cement Corporation has started work on the erection of a cement plant at Beachville, Ont., to have a daily capacity of 4500 bbl.

The Sinclair Construction Co., Campbellford, Ont., has the general contract for a power house at Campbellford for the Hydro Commission to cost $250,000. Equipment, which is not included in the contract, will cost aproximately $500,000.

The Lyons Fuel & Supply Co., Ltd., Sault Ste. Marie, Ont., is building an addition to its brick plant for the manufacture of rug face brick. Machinery to manufacture tile will also be installed.

Plans are being prepared by Gore, Nasmith & Storrie, engineers, Confederation Life Building, Toronto, for additions to the Belleville, Ont., waterworks system. The work will include a steel intake pipe, gasoline driven motors, purification plant, etc. J. W. Holmes is clerk.

Bids for the construction of a sludge sewage disposal plant for Cochrane, Ont., are being received by R. C. Morston, town clerk.

Port Moody, B. C., is having plans prepared for an addition to the waterworks plants to cost $25,000. Perry D. Roe is mayor.

The woollen mill owned by J. Walshaw & Son, Ltd., Bolton, Ont., was destroyed by fire with loss to building and equipment of $150,000. It will be rebuilt.

John Wilson, Huron Street, Collingwood, Ont., is preparing plans for a factory for the Canadian Postal Lock-Nut & Bolt Co., for which bids will soon be called. F. A. Bassett, Collingwood, is president.

The general contract for a machine shop at Montreal, for the Montreal Harbor Commission, 57 Common Street, has been awarded to Quinlan, Robertson & Janin, 50 Notre Dame Street. W. P. Fennell, Jr., is manager of the Harbor Commission.

The Edwards Lumber & Pulp, Ltd., Pembroke, Ont., has purchased the mills and limits of the Colonial Lumber Co., Pembroke, and proposes to increase the capacity. It is also the intention to build a planing mill, and the erection of a pulp and paper mill will come up for consideration later. Officers of the Edward company include Gordon C. Edwards, Ottawa, president; J. W. Smith, Pembroke, vice-president and general manager; E. R. Bremner, Ottawa, treasurer; W. R. Beatty, Pembroke, secretary.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

Iron and Soft Steel Bars and Shapes

Bars:	
Refined iron bars, base price	3.54c.
Swedish bars, base price	7.50c.
Soft steel bars, base price	3.54c.
Hoops, base price	5.19c.
Bands, base price	4.39c.
Beams and channels, angles and tees 3 in. x ¼ in. and larger, base	3.64c.
Channels, angles and tees under 3 in. x ¼ in., base	3.54c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.60c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	4.10c.
Toe-calk, ½ x ⅜ in. and larger	4.60c.
Cold-rolled strip, soft and quarter hard	7.50c. to 8.50c.
Open-hearth, spring-steel	5.00c. to 7.50c.
Shafting and Screw Stock:	
Rounds	4.65c.
Squares, flats and hex	5.15c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High speed steel, 18 per cent tungsten	75c. to 80c.

Tank Plates—Steel

¼ in. and heavier	3.64c.

Sheets

Blue Annealed

	Per Lb.
No. 10	4.59c.
No. 12	4.64c.
No. 14	4.69c.
No. 16	4.79c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.45c. to 4.80c.	.....
Nos. 22 and 24	4.50c. to 4.85c.	5.10c.
No. 26	4.55c. to 4.90c.	5.15c.
No. 28	4.65c. to 5.00c.	5.25c.
No. 30	4.85c. to 5.20c.	.....

No. 28 and lighter, 36 in. wide, 10c. higher

Galvanized

	Per Lb.
No. 14	4.75c. to 5.10c.
No. 16	4.90c. to 5.25c.
Nos. 18 and 20	5.05c. to 5.40c.
Nos. 22 and 24	5.20c. to 5.45c.
No. 26	5.35c. to 5.70c.
No. 27	5.50c. to 5.85c.
No. 28	5.65c. to 6.00c.
No. 30	6.10c. to 6.50c.

No. 28 and lighter, 36 in. wide, 20c. higher

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
⅛ in Butt	—41	—24	⅛ in. Butt	— 4	+19
¼ in. Butt	—46	—32	¼ in. Butt	—11	+ 9
1-3 in. Butt	—48	—34	1-1½ in. Butt.	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap	— 5	+14
7-8 in. Lap	—41	—11	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap	—34	— 6	7-12 in. Lap	— 3	+16

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic	5.00c.
Annealed soft	5.00c.
Galvanized annealed	5.65c.
Coppered basic	5.65c.
Tinned soft Bessemer	6.65c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	19¾c. to 20¾c.
High brass wire	20¼c. to 21¼c.
Brass rods	18 c. to 19 c.
Brass tube, brazed	27¾c. to 28¾c.
Brass tube, seamless	25½c. to 26½c.
Copper tube, seamless	27 c. to 28 c.

Copper Sheets

Sheet copper, hot rolled, 23¾c. to 24½c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin Grade "AAA" Charcoal 14x20	Bright Tin Grade "A" Charcoal 14x20	Coke—14 x 20	Prime	Seconds
		80 lb.	$6.55	$6.30
		90 lb.	6.65	6.40
		100 lb.	6.75	6.50
IC. $11.75	$10.50	IC.	7.00	6.75
IX. 13.00	11.75	IX.	8.25	8.00
IXX. 14.75	13.00	IXX.	9.50	9.25
IXXX. 16.50	14.75	IXXX.	10.75	10.50
IXXXX. 18.50	16.50	IXXXX.	12.00	10.75

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits pig	41c.
Bar	48c. to 53c.

Copper

Lake ingot	17½c.
Electrolytic	17 c.
Casting	16¾c.

Spelter and Sheet Zinc

Western spelter	7½c.
Sheet zinc, No. 9 base, casks	10¼c. open 10¾c.

Lead and Solder*

American pig lead	8c. to 8¼c.
Bar lead	11c. to 12c.
Solder, ½ and ½ guaranteed	29c.
No. 1 solder	27c.
Refined solder	23c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	8c. to 8½c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	32c. to 33c.

Old Metals

Business is quiet and the market is practically unchanged. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy crucible	12.50
Copper, heavy wire	11.75
Copper, light bottoms	10.00
Brass, heavy	6.50
Brass, light	5.50
Heavy machine composition	9.25
No. 1 yellow brass turnings	6.75
No. 1 red brass or composition turnings	8.00
Lead, heavy	5.00
Lead, tea	3.75
Zinc	4.00